ENGINEERING NEWS-RECORD

A McGRAW HILL PUBLICATION

HORTON* PENSTOCK

New Steel Conduit for Hydro Plant

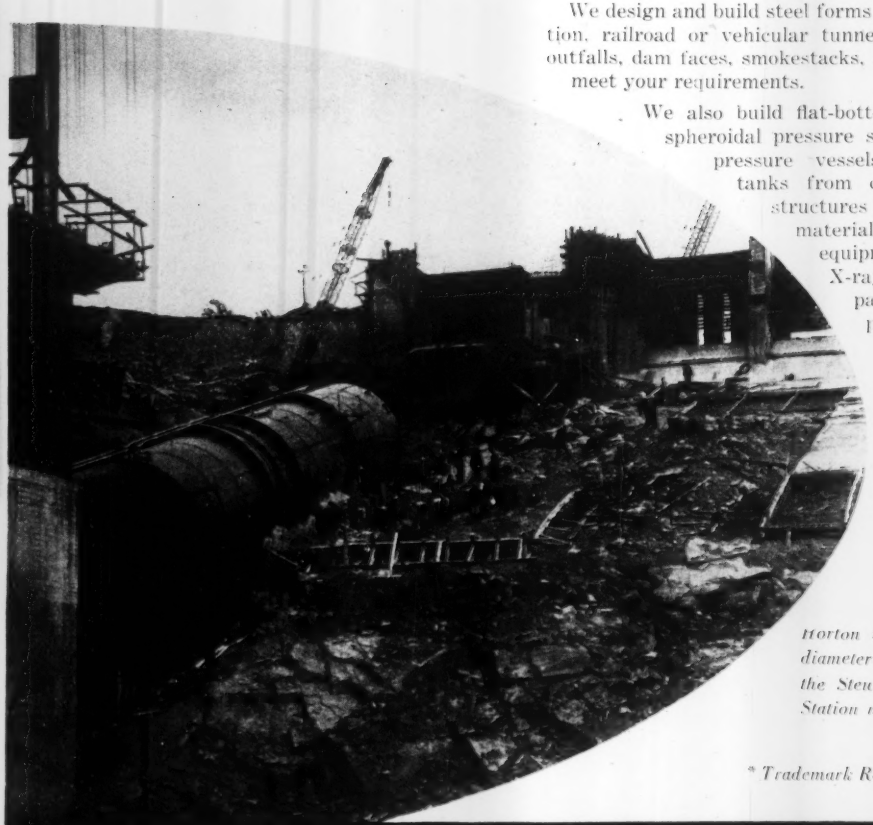
The welded steel penstock installed at the Stewart's Bridge Hydro Station near Corinth, N. Y., is a 22-ft. diameter by 215-ft. steel conduit to carry water to a new generating unit in the power house.

This penstock, which was fabricated in one of our four strategically-located plants and erected at Corinth by our own field crews, is a typical example of the type of pipe lines and penstocks we have built for hydro-electric generating plants and for water diversion projects in all parts of the world. This, however, is only one of the many types of heavy steel plate work fabricated and erected by Chicago Bridge and Iron Company.

We design and build steel forms for hydro-electric, irrigation, railroad or vehicular tunnels, mineshafts, conduits, outfalls, dam faces, smokestacks, ammunition huts, etc., to meet your requirements.

We also build flat-bottom tanks, spherical and spheroidal pressure storage tanks, cylindrical pressure vessels, and elevated water tanks from carbon steel, or special structures from corrosion-resistant materials. We have complete equipment for stress relieving, X-raying, and pickling and painting by the Horton phosphoric acid process.

For more complete information about our ability to handle your job, write our nearest office. There is no obligation on your part.



Horton welded steel penstock 22-ft. diameter by 215-ft. being installed at the Stewart's Bridge Hydro-Electric Station near Corinth, N. Y.

* *Trademark Registered U. S. Patent Office.*

CHICAGO BRIDGE & IRON COMPANY

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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA. In Canada: HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

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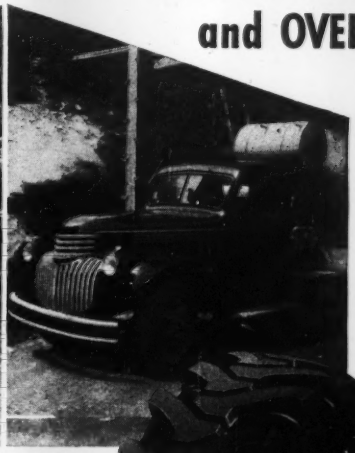
GO IN – GET THE LOAD – CARRY IT OUT and OVER THE HIGHWAY

FASTER!
EASIER!
At Less COST!

"OFF-THE-ROAD"



"ON-THE-ROAD"

General D. T. L. with deep, sharp, angled cleats and sturdy, high shoulder lugs. Designed for maximum traction on soft surfaces—forward or backward.

General H. C. T. for trucks that go off-the-road to pick-up, deliver loads. Free-rolling tread and stronger body for more miles, more safety.

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ENGINEERING NEWS-RECORD

ABP Member

Volume 149 October 16, 1952 No. 16

WALDO G. BOWMAN
Editor

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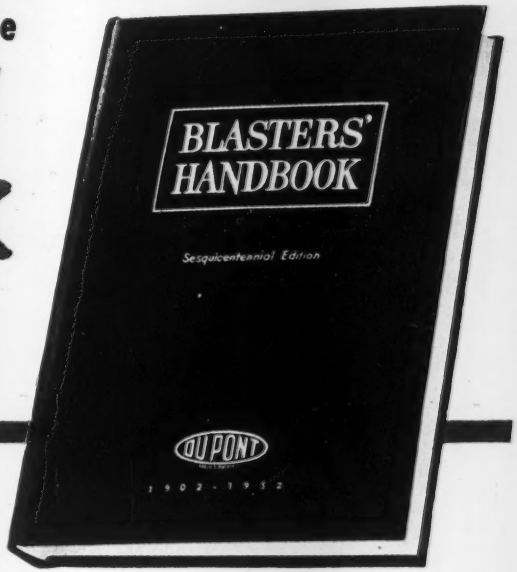
The Sesquicentennial Edition of the

BLASTERS' HANDBOOK

COMPLETELY REVISED... COMPLETELY UP-TO-DATE!



THE SESQUICENTENNIAL EDITION . . .

of the Du Pont Blasters' Handbook is now available. Bigger and more helpful, the new book is filled with more information than ever before. It is fully illustrated with 33 chapters of basic information on blasting procedures that every user of explosives should have.

THIS BRAND-NEW BLASTERS' HANDBOOK . . .

is a complete and modern guide to better blasting. It describes preferred practices for all types of blasting jobs in all locations. Outlines industry-approved methods . . . provides reference charts and convenient tables. Completely new sections are devoted to new, improved products and their use, and to the newest developments in blasting techniques based on field experience. Contains an up-to-date and officially approved check list of safety measures.

HELPS YOU DO A BETTER, MORE EFFICIENT JOB

Blasters in every type of work will find this latest handbook a valuable aid. It answers many questions . . . helps you do a more satisfactory, more efficient job. Copies of this new, larger, and better edition of the Du Pont Blasters' Handbook may be obtained by mailing the handy coupon at right, or through the Du Pont Explosives representative in your own area. Price $1.75, postpaid. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

CONTAINS

480 pages 240 illustrations
Much new subject matter
Larger type for easier reading

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150th Anniversary

BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*

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Explosives Department, 2539-F Nemours Building
Wilmington 98, Delaware.

Gentlemen: I'd like to have a copy of the Sesquicentennial Edition of the Du Pont Blasters' Handbook. Enclosed is check ( ) . . . money order ( ) . . . for $_____. Please forward postpaid_____copies at $1.75 each.

Name_____

Company_____

Title_____

Street Address_____

City_____Zone_____State_____

WATER Paces Gary's Business Growth!

Allis-Chalmers Helps Indiana's Fastest

INDIANA'S FASTEST GROWING CITY knows that an adequate water supply is necessary for future growth. Gary, one of America's few planned cities, has zoomed to its present 135,000 population (Indiana's second greatest) in less than 50 years.

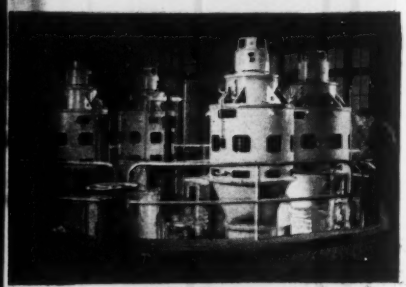
And planning for a still bigger future, Gary recently installed these Allis-Chalmers pumps and motors to create capacity adequate for population *doubling!* With over 123 local industries — including the world's largest complete steel mill, sheet and tin mill, and cement plant — Gary is wise to allow for plenty of future growth.

The Gary-Hobart Water Corporation operation also is unusual in that all city water comes through a Lake Michigan suction tunnel 6 ft in diameter and *three miles long*. When power fails, this moving column of water can cause a surge flooding the main pumping station.

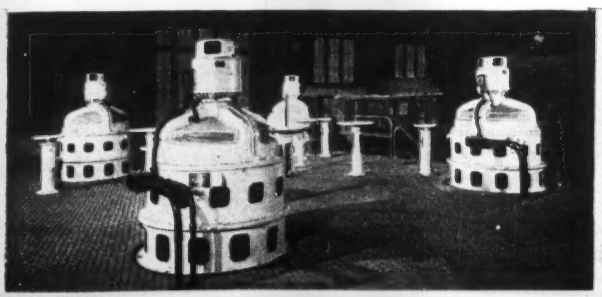
With the original horizontal pumping units, a surge rendered motors inoperative for some time. The four new Allis-Chalmers vertical mixed flow units were made 57 ft long so that the impellers are kept submerged despite "draw down" and yet the 350 hp motors cannot be flooded. Fifteen foot extensions protect the motors for the four high head units.

When *your city* plans expansion or modernization, do as Gary and other leading cities are doing — take advantage of Allis-Chalmers experience in municipal pumping equipment. Ask for Pump Bulletin 08B6146A, containing 24 pages fact-packed with the kind of engineering data you'll want to keep handy. Just call your nearest A-C sales office or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3792



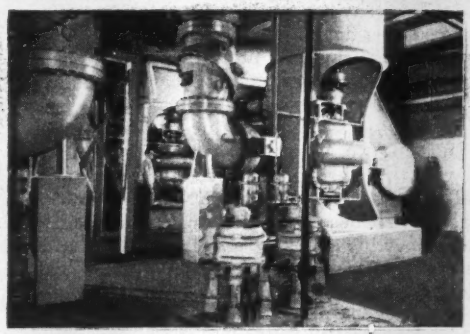
LOW LIFT PUMPS in the 100 ft-deep well at tunnel's end are 36 x 24 in. mixed flows, each rated 15,000 gpm against 50 ft head; driven by 350 hp, 720 rpm synchronous motors. Units were made 57 ft long to avoid motor flooding in case of power failure. In 1951, Gary's peak pumpage rate for one hour was 44 M.G.D.



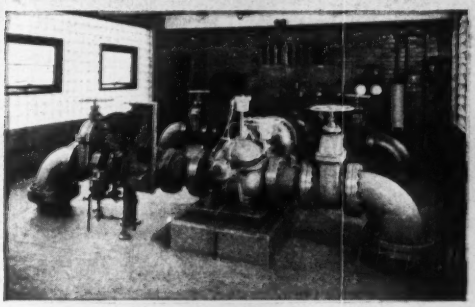
HIGH HEAD PUMPS are 24 x 18 in. centrifugals, each rated 14,000 gpm against 160 ft head; driven by 700 hp, 720 rpm synchronous motors. The high head units pump directly into the mains, operating in series with the mixed flow pumps. Special 15 ft high barrel type supports keep the motors out of flooding danger.

Growing City Expand Water Works

METROPOLITAN GARY, the planned city built on the sand dunes at the lower end of Lake Michigan. Portions of steel mills and lake are seen in the distance.



GREAT FLEXIBILITY at the main pumping station is provided by the header and valving arrangement. Operation can be varied from only one high head unit in service — pumping directly from well to mains and adequate for light loads — to all eight units pumping simultaneously — adequate for Gary population doubling.

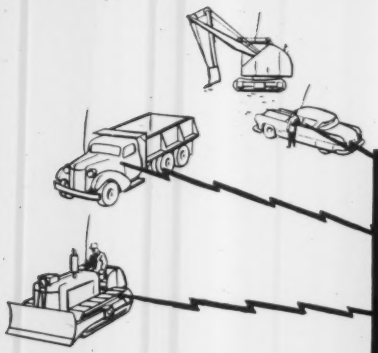


GLEN PARK BOOSTER STATION is also exclusively Allis-Chalmers. These two 12 x 12 in. centrifugal pumps are each rated 3200 gpm against 115 ft head; driven by 50 hp, 1160 rpm induction motors. To maintain constant pressure, they are automatically remote-controlled from the water tower.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Builders of the World's Widest Range of Public Works Equipment



Motorola 2-Way Radio

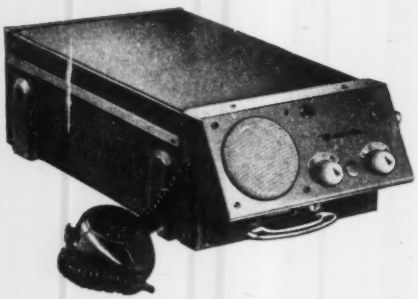
MORE THAN PAYS FOR ITSELF IN EVERYDAY USE

Instant 2-way radio contact cuts costs, speeds operations on more and more private and municipal construction jobs

Motorola radio centralizes control of wide-spread crews . . . co-ordinates operations . . . cuts "down" time . . . reduces travel time . . . gets men and equipment to the job faster. These savings pay for Motorola installations over and over again.

Motorola radio is ruggedly built, quickly installed, easily operated—a *hard-working tool* for day-in, day-out utility.

Motorola is today's greatest value in 2-way radio. Eight exclusive Motorola features guarantee precision selectivity . . . time-test durability . . . obsolescence-proof design. With Motorola you get simplified operation, rugged construction, outstanding dependability. Motorola engineering puts 24 years of electronics leadership into every custom-tailored installation. Write today—let a friendly Motorola engineer in your vicinity show you how Motorola 2-way radio can improve *your* business!



Uni-Channel Sensicon Dispatcher puts 2-way contact in every vehicle . . . takes jolts and shocks of rough roads . . . speeds every operation. Sealed-in selectivity ends 15 nuisance tuning adjustments forever. Obsolescence-proof circuits stay up to date for years to come.

Motorola 2-way radio is built to give better service longer . . . every unit is backed by 24 years of experience in mobile radio.

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Wherever they're put to work, "Eucs" do the kind of a job that makes them the preferred equipment for moving earth, ore, rock and coal in off-the-highway service.

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If you own "Eucs" you're already benefiting from their production and profit advantages. If you know them only by reputation, we suggest you get performance facts and figures from your Euclid distributor.

Euclid Scraper—15.5 cu. yds. struck, 21 cu. yds. heaped at 1:1 slope . . . 275 h.p. engine . . . top speed, loaded, 28.2 m.p.h.

Bottom-Dump Euclids—13 to 25 cu. yds. . . . 190 to 300 h.p. . . . top speeds loaded to 34.4 m.p.h.

Rear-Dump "Eucs"—10 to 34 tons . . . 125 to 400 h.p. . . . spring mounted or semi-rigid drive axles . . . top speeds loaded to 36.3 m.p.h.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID — CODE: BENTLEY

It's the Operators'

BEST BY A DAM SITE. Troy Hood and Jack Rank (shown here with Dirt Foreman Sam Crawford) operate TD-24s for Guy H. James, building the great Oahe Dam in South Dakota. Hood says: "I can keep right behind the scrapers—catch 'em sooner and push 'em out faster because TD-24 controls are easier." And Rank chimes in: "Much easier to handle than any other tractor."

"ALMOST THINKS FOR ITSELF!" That's what Jess Leatherwood says about the Big Red TD-24 he operates for Macon Construction Co., Franklin, N. C. "It pushes more, moves it faster and handles easier than any other crawler I've ever been on."

"WE RIP PLACES YOU'D USUALLY HAVE TO BLAST," says another Macon operator, Roy Cantrell. "We've been working in the Blue Ridge Mountains on rock you couldn't touch with a dozer till the TD-24 came along. Now we blade where we couldn't scratch before, and rip where we used to dynamite!"

"OUR TD-24s REQUIRE LESS SERVICE," says John Tickler, Service Superintendent for John E. Bloomer Construction Co. "These big red machines are very accessible, very easy to maintain. And when we do need help, the International Distributor is always on the job!"

Crawler!

Read what the operators and servicemen say about "Big Red", the International TD-24...

"HOW DO I LIKE 'BIG RED'?" asks George Miller. "Listen: This TD-24 is just the fastest and surest handling tractor there is, that's all! Nothing I've seen can touch it for moving dirt." George and his TD-24 move dirt in North Carolina for Kiker & Yount Construction Co.

"GREATEST THING I'VE SEEN," says Bruce Olson (right), TD-24 operator and Sec.-treas. of G. A. Olson Construction Co., Marshall, Minn. "The TD-24 is the easiest crawler of all to operate. The high-low shift is great for whipping around to the cut after dumping the load. It's the fastest equipment going for anything up to a 3,000-foot cycle!" Man in center is Glen Olson, Bruce's brother and company president. At left is Superintendent Donald Young.

Ask the men who know. Ask the operators. They know that *this* makes "Big Red" the Champ:

TD-24 POWER

148 maximum drawbar horsepower, more than any other crawler on the market.

TD-24 SPEED

Up to 7.8 m.p.h. with 8 forward speeds, 8 reverse. Moves loads faster, gets back quicker for more work-cycles per hour.

TD-24 STEERING

Fingertip control for pivot-turns, feathered-turns and *turns with power on both tracks.*

TD-24 STARTING

Exclusive International push-button starting for quick starts any time in any weather.

Want to know more reasons why the Big Red TD-24 is the work-champ of the world?

Ask your International Industrial Distributor. Ask TD-24 operators. Ask the men who know—and you'll be a TD-24 man yourself from then on in!

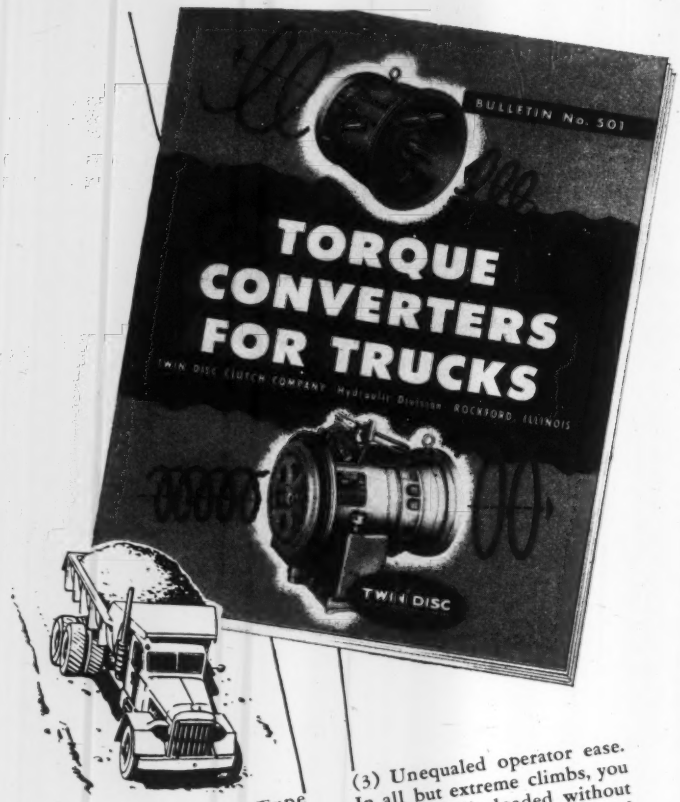
INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

SEE YOU AT THE POLLS!

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS


BULLETIN No. 501
TORQUE CONVERTERS FOR TRUCKS
TWIN DISC CLUTCH COMPANY Hydraulic Division ROCKFORD, ILLINOIS
TWIN DISC

Twin Disc Truck-Type Torque Converters are helping set new standards for operator ease, trip time and low maintenance in open pit mining. In mine after mine where loads are big and hauls steep, trucks equipped with Twin Disc's Converters have increased operating efficiency, cut hauling costs through triple advantages. Only Twin Disc Truck-Type Hydraulic Torque Converters provide these exclusive advantages: (1) Highest (up to 6-to-1) torque multiplication, (2) Torque Converter braking, (3) Unequaled operator ease. In all but extreme climbs, you come up fully loaded without gear shifting, and descend empty without using the brake pedal!

Write for newest Truck-Type Torque Converter Bulletin (No. 501) to see which of Twin Disc's two converters—Model CF for short, steep hauls or Model DF (with direct drive) for longer hauls with intermittent climbing and descending—fits your requirements. Or contact your nearest Twin Disc Factory Branch.

Built for a Long Life . . .
Backed for a Lifetime

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA

READER COMMENT

Not South Norfolk

Sir: On page 37 of your Aug. 21 issue our tunnel is designated as connecting Portsmouth and South Norfolk.

May we ask that you correct this information, as the tunnel connects Norfolk and Portsmouth. You may have gotten the idea that the Tunnel connected Portsmouth to the North side of the Elizabeth River connecting with South Norfolk which is not the case. The northern portal of the tunnel is in Berkeley—a sub-division Norfolk.

I enjoyed the rest of this article a great deal concerning the ceiling of the tunnel and am passing it among our engineering staff for their information.

RUSSELL S. BARRETT,
General Manager,
Elizabeth River Tunnel Commission
Norfolk 6, Va.

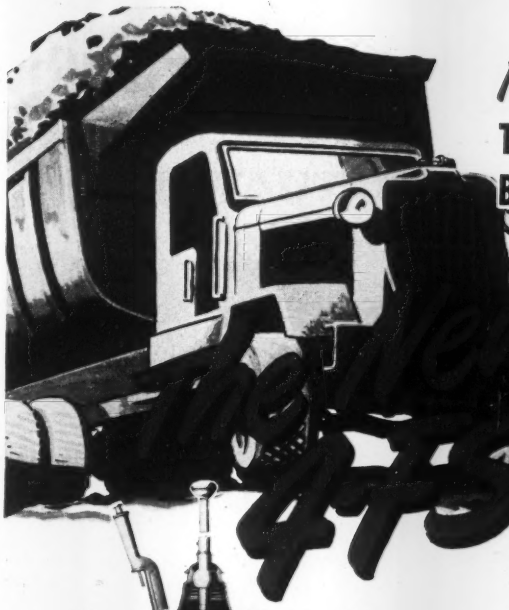
Engineers and contractors

Sir: In his letter, which appears on page 10 of the July 31 issue of ENGINEERING NEWS-RECORD, R. B. Macfarlane is repeating oft-used phrases concerning the dubious responsibility of the contractor to his client, which I believe are detrimental to the entire construction industry, engineering and contracting alike. This being the predominant attitude, engineers and architects tie up the contractor with many long-winded and unnecessary specifications in their attempt to "protect" their client from his contractor. Instead of saving the client money they force the contractor to increase his contingency allowance and thereby raise the cost of the project in many cases.

Certainly there have been contractors guilty of sharp practices. But why do business with them? Just because a group of contractors tender bids on the same job within a close range of each other is no reason to assume the finished product or the means of achieving it are the same. A bonding company can readily evaluate the various contractors and a surety bond should be a definite part of every important contract. There are also cases in which the agents' skirts were not so clean either.

This brings up the question of UNDIVIDED RESPONSIBILITY. The present practice of specifying the method and accepting the results is not as efficient as stating what is desired and allowing the contractor to provide it,

(*Continued on page 14*)

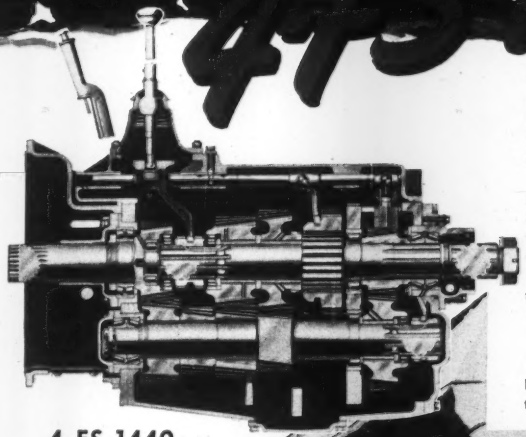


Now—Get the Advantages of Torque Converters on Your Biggest Trucks—with the New Fuller 4-FS-1440

In keeping with its tradition of setting the pace with "The Best for the Biggest," Fuller announces its new 4-FS-1440 Transmission with closely spaced ratios for use with truck-type torque converters. This new unit makes new load-and-road performance possible in heavy duty service.

Built to deliver the power from the biggest automotive diesel engines now available plus ample capacity for high torque multiplication from the most advanced torque converters, the new 4-FS-1440 puts up to 400 hp. to work efficiently and dependably.

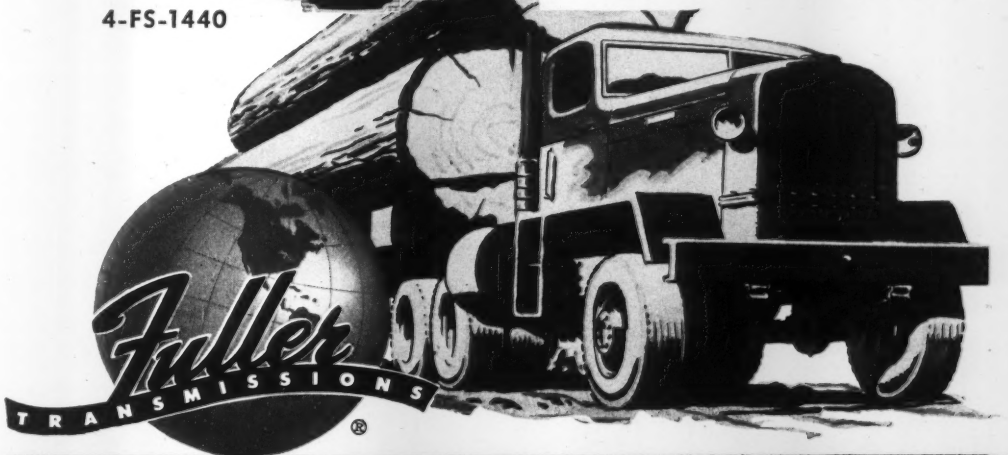
For maximum service plus maximum versatility in the toughest of heavy hauling, investigate the new 4-FS-1440. Write for performance and application data.



4-FS-1440

VITAL STATISTICS

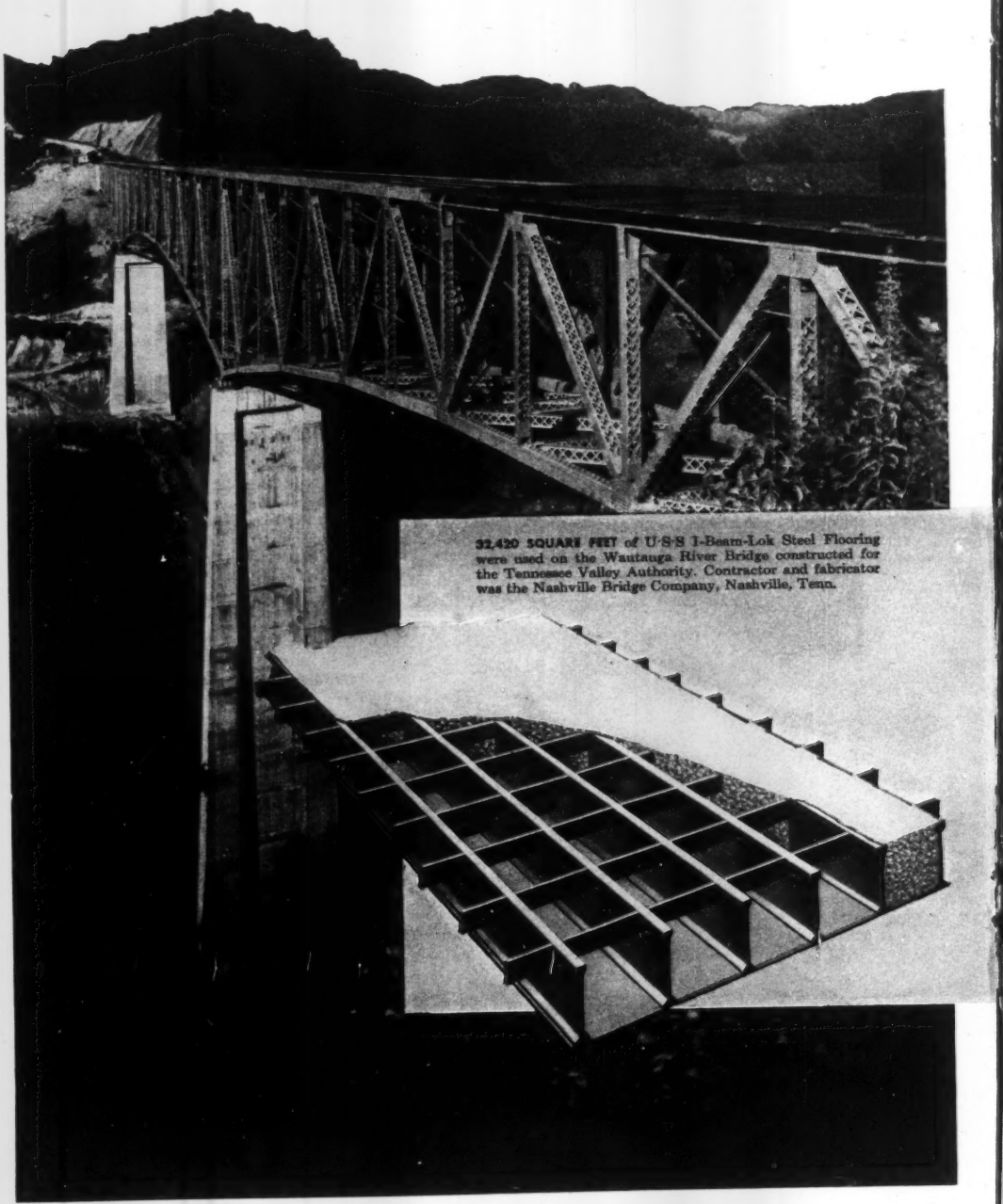
Hp. handled—400. Speeds forward, 4: first, 1.98; second, 1.40; third, 1.00; fourth, .71. Reverse, 1.61. Weight 775 pounds.



FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO 13F, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wis. • WESTERN DISTRICT OFFICE (SALES & SERVICE—BOTH DIVISIONS), 1060 E. 11th Street, Oakland 6, Calif.

U·S·S I-Beam-Lok Steel Flooring



32,420 SQUARE FEET of U·S·S I-Beam-Lok Steel Flooring were used on the Wautauga River Bridge constructed for the Tennessee Valley Authority. Contractor and fabricator was the Nashville Bridge Company, Nashville, Tenn.

reduced floor weight 42%

ON WAUTAUGA RIVER BRIDGE

By using U·S·S I-Beam-Lok Steel Flooring on this bridge over the Wautauga River, the Tennessee Valley Authority was able to cut the weight of the bridge floor nearly in half and realize substantial savings in structural members. In addition, the speedy construction resulting from the use of this flooring enabled TVA to open the highway to the dam site sooner.

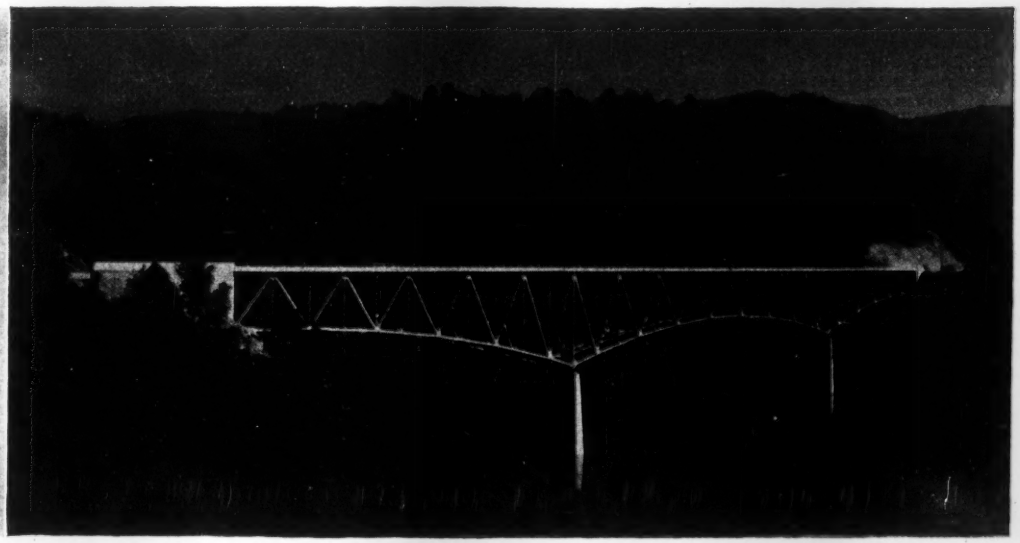
TVA specified 3″ concrete-filled U·S·S I-Beam-Lok with ¼″ concrete overfill for the job, and the approximate weight of the 32,420 square feet required was 1,601,540 pounds. Had 7″ concrete been used the floor weight would have been about 2,755,700 pounds. Use of U·S·S I-Beam-Lok thus saved 1,154,160 pounds, or about 42% of the weight of the floor with 7″ concrete construction.

Concrete-filled type U·S·S I-Beam-Lok Steel Flooring provides a smooth-riding, safe, fireproof and long-life surface.

By reducing the weight on the supporting structure, this type of flooring permits use of smaller stringers, floor beams, trusses and piers. U·S·S I-Beam-Lok is delivered completely shop fabricated and no concrete forms are necessary.

In addition to the concrete-filled type, U·S·S I-Beam-Lok Steel Flooring is available in open-type weighing as little as 18.8 lbs./sq. ft.

Get full information on these "modern floors for modern traffic." Our engineers will be glad to discuss their possibilities with you.



UNITED STATES STEEL COMPANY, PITTSBURGH
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
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U·S·S I-BEAM-LOK

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SAVE

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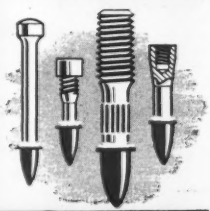
for steel and concrete fastening

10 star values bring new ease, speed, utility and economy

SEE the new RAMSET JOBMASTER that fastens **in split seconds** into steel or concrete. Check the big, **10-Star Values** for faster, easier, better fastening than ever before. **One-Piece Tool** and **Trigger Action** for quick, simple loading and firing. **Self-contained Barrel Extension,** always ready when needed. **Gas Diverter** to stop spalling. **Visi-Chek Button** and **Manual Safety Control** for positive protection. Exclusive **Roto-Set Safety Shield** for pin-point positioning. All these add up to the greatest work-saving, time-saving, money-saving advantages in the industry.

Always Use Tru-Set Fasteners

When you add these JOBMASTER values to the advantages of Tru-Set Fasteners, with the exclusive Red-Tip Pilot that guides them straight to the work, you've got an unbeatable combination for ease, speed, utility and economy. With 54 sizes and types, there's a Tru-Set Fastener for almost any job. Ask your RAMSET Dealer today for Fastener Specification Booklet, and demonstration of how this RAMSET team can cut fastening costs and get work finished faster. Remember, RAMSET SYSTEM is the pioneer in powder-actuated fastenings—with more users than any other tool.



Ramset Fasteners, *INC.*

Division of Olin Industries, Inc.

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READER COMMENT

and paying him accordingly. This is the European system and it is rapidly combining the engineering and contracting business in this country. It is a logical integration of purposes, those of the designer and of the builder. The primary incentive of these two parties being satisfaction of the clients needs and wishes.

LOUIS A. WARNER
New Haven, Conn.

More on alternate designs

Sir: The term, competitive design bid, means that the builders or contractors design and construct a structure based on the idea and/or preliminary sketch of the owner. The contractor is free to devise any methods of construction and use any materials that he chooses as long as he produces the desired results from an architectural, hydraulic, and structural points of view.

Our firm has, in recent months, designed and fabricated several steel structures; we believe that some of these may have come under the competitive design bid classification. These arrangements have been found to be quite satisfactory, and we believe the owner obtained a substantial structure at reasonable cost. One may argue that we owe nothing to the owner and the profit motive was foremost in our mind. It is certainly a fact that we intend to make a profit from our operations, but is it not equally as true that architects and consulting engineers, who have a legal and moral obligation to an owner, intend to have a going concern keep going? In addition to our design we must be sure that our structure is reliable in the field in order to maintain our reputation. The entire responsibility of a project rests in our hands. Under the normal setup, should a failure occur, the responsibility of the architect, engineer, and contractor can be shifted about until the situation is quite confusing.

This method of building, of course, does not lend itself to every situation, but I believe more serious consideration should be given to it by owners in areas where it might prove feasible. The system has the inherent qualities that can produce better engineering from the design, construction, and economic standpoints and should be utilized when possible.

ARTHUR MONSEY, JR.
Engineer, Monsey Iron & Metal Co.
Salt Lake City, Utah

(Continued on page 16)

Acceptance

Wherever you are, there's a MARION working near you —a MARION dragline, clamshell, crane, pull shovel, pile driver or walking dragline. The *worldwide acceptance* MARION machines have won over a period of 68 years is one of the best recommendations we have.

Their selection for such impressive assignments as the Boulder Dam, Panama Canal, TVA dams, and other big projects in construction, mining, quarrying and coal stripping endorses MARION as a name you can trust.

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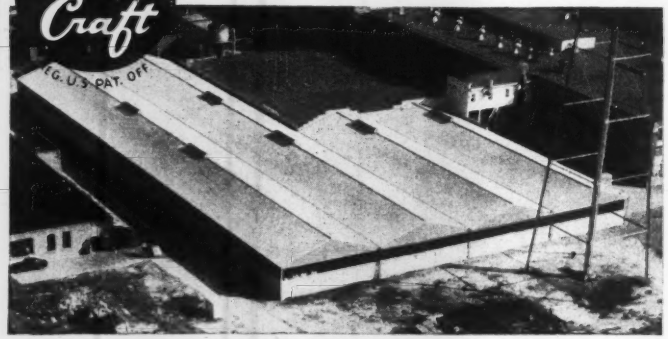
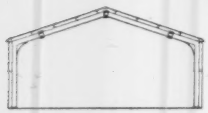
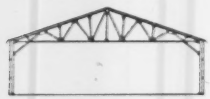


...with a STEELCRAFT METAL BUILDING

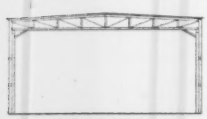


RIGID FRAME TYPE



TRUSS TYPE

TITE LOCK (FRAMELESS)



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To meet the specific requirements of one of the nation's largest textile manufacturers, STEELCRAFT engineers recommended the use of a 200′ x 300′ rigid frame truss building with 50′ clear spans. Construction features are concrete block curtain walls, continuous factory windows and corrugated asbestos roof.

Finished square foot cost including foundation, erection and all mechanical branches was much lower than a specially fabricated building of similar design.

STEELCRAFT can solve your problem too. Flexibility of design and low cost is assured by a fully integrated manufacturing operation with continuous flow of standard parts, doors, windows . . . delivery timed to meet your construction schedule.

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☐ Send engineer to survey my building requirements.

☐ Send me information on complete line of Steelcraft Metal Buildings

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Write today for complete information on Steelcraft Steel Buildings

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MANUFACTURING COMPANY
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READER COMMENT

Why so few engineers

Sir: I have been following, with considerable interest, your articles and "Readers Comments" on the dearth of engineers and engineering students, and of the alleged causes of same.

It appears to me that the primary cause can be found in the employment columns of our daily papers. For example, the Aug. 10 issue of the "Commercial Appeal", Memphis, Tenn., lists:

Design Eng. M.E. or Struct. . . . $550
Auto Body, sheet metal mech. . . 600

The above ad was called to my attention by my 15-year-old, high-school son, who has been planning on attending an engineering school.

My son asked how much an engineering education would cost.

When I told him it would cost a minimum of $4,000 and a lot of hard work, he showed me this ad, and said that he could not see why he should spend four years of his life and all that money studying, when he could start off as an apprentice making some money, and then in three or four years would be making more than most graduate engineers.

What could I say to him in answer to this?

WILLIAM S. JETT, JR.
Professional Engineer,
Charleston, S. C.

CALENDAR

President's Highway Safety Conference. Extraordinary session of the Pan American Highway Association, Social Security building, Mexico City, Oct. 26-Nov. 1.

California section, American Water Works Association, Huntington Hotel, Pasadena, Calif., Oct. 27-31.

American Association of Port Authorities, Savannah, Ga., Nov. 10-14.

Structural engineering conference, University of Illinois, Urbana, Nov. 12-14.

North Dakota Society of Professional Engineers, Minot, N. D., Nov. 13-15.

International Association of Sanitation Engineers, conference, Buenos Aires, Argentina, Nov. 19-30.

Society for Experimental Stress Analysis, Hotel McAlpin, New York City, Dec. 3-5.

Illinois traffic engineering conference, University of Illinois, Urbana, Dec. 11-12.

The cost of good roads—the economic approach

The U. S. is spending about $4 billion a year for its streets and highways—and engineers are unanimous in agreeing that this rate of spending, high as it is, will never bring highways up to modern standards. Estimates of the cost of building really adequate highways range between $30 billion and $100 billion for a ten-fifteen year program.

Yet even these high estimates overlook one key fact—that traffic would grow a lot faster if the roads were better. The record of toll roads—where traffic consistently far exceeds engineers' estimates—shows how the public reacts to a chance to use a really safe and speedy highway. Consequently, any plans for an adequate road-building program should allow for greater rise in traffic that would result as highways become less crowded and dangerous.

How fast would traffic grow if the roads were improved? There's no way of proving any answer. But a look at recent history provides some useful clues. Back in the Twenties, the country spent about 10 cents on new highways (at 1947-49 average prices) for every added vehicle-mile traveled. Traffic grew much faster than the general economy.

But traffic abruptly stopped growing faster than the rest of the economy when spending for new highways fell below about 8 cents for each added vehicle-mile traveled. In fact, it fell back—traffic is actually smaller today in relation to the size of the total economy of the U. S. than it was in any year in the period between 1931 and 1940.

Traffic got a temporary setback during the war, of course. But the basic reason for the sudden end to growth of highway traffic in relation to total business volume is simply that roads and highways were not expanded fast enough (Trend, September 25). If traffic had grown only one-half as fast in relation to general business between 1937 and 1951 (leaving out four war years) as it did in the Twenties, it would have amounted to 835 billion vehicle-miles in 1951. But to get this added growth in traffic we would have had to spend about $28 billion more on roads than we did over that period. As it happened, 1951 traffic was only 488 billion vehicle-miles.

Today, traffic is growing just about as fast as general business. If the economy grew (as a rough estimate) 25% in the next ten years, traffic might grow 25% too.

But what would happen if the U. S. decided to spend more for the highways? Traffic would almost certainly grow faster. If it grew only half as fast in relation to total business as it did in the 1920s, it would more than double in ten years. It would cost about $4 billion a year, in 1947-49 average prices, to build highways adequate to take care of this new traffic alone—without any allowance for maintaining or improving older roads.

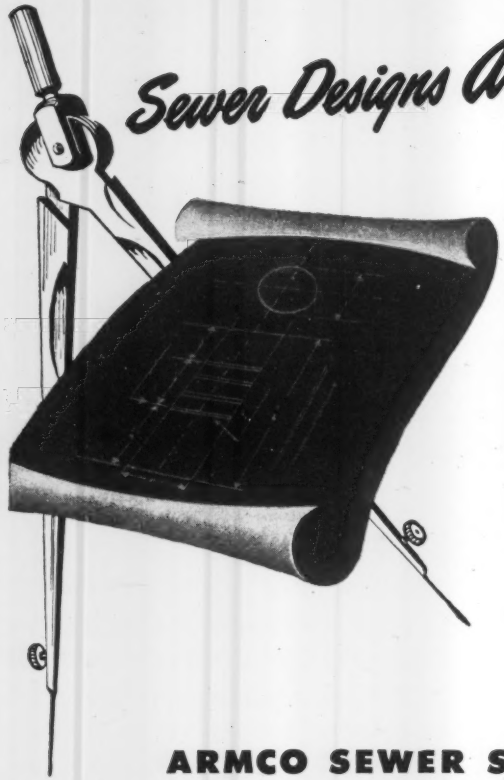
• **How much altogether?**—An adequate road-building program would, in addition, have to allow for maintenance plus replacement of older roads, which together might cost $25 billion over ten years. In addition, there is the cost of bringing our present road system up to modern standards, estimated at $32 billion in 1951 by the American Association of State Highway Officials.

Adding it all up brings the total cost to about $90 billion in 1947-49 prices. Allowing for inflation, that would mean spending about $10 billion a year on streets and highways—or fully $6 billion a year more than we are spending now.

This is not an exact calculation of the cost of adequate roads, of course. Traffic might not grow as fast as estimated—or it might grow faster. Furthermore, there is no prospect of being able to finance such a huge amount of work in such a short space of years. But the calculation does give some idea of what a fully adequate highway program would cost.

Future Trends will deal with the cost of building adequate roads, and with methods for financing a bigger highway program than the present one.

Sewer Designs Are No Good... on paper!



The best of sewer designs are of little value until they are incorporated into a functioning conduit. Even then the conduit must have adequate strength and material durability to maintain your specifications throughout its normal life. This is why many experienced engineers are specifying Armco Corrugated Metal Sewers.

Consider the importance of structural strength. The designed value of any sewer will change unless it retains grade and alignment, has tight joints to prevent infiltration of ground water and solids, as well as material strength to withstand the impact and vibration of heavy traffic.

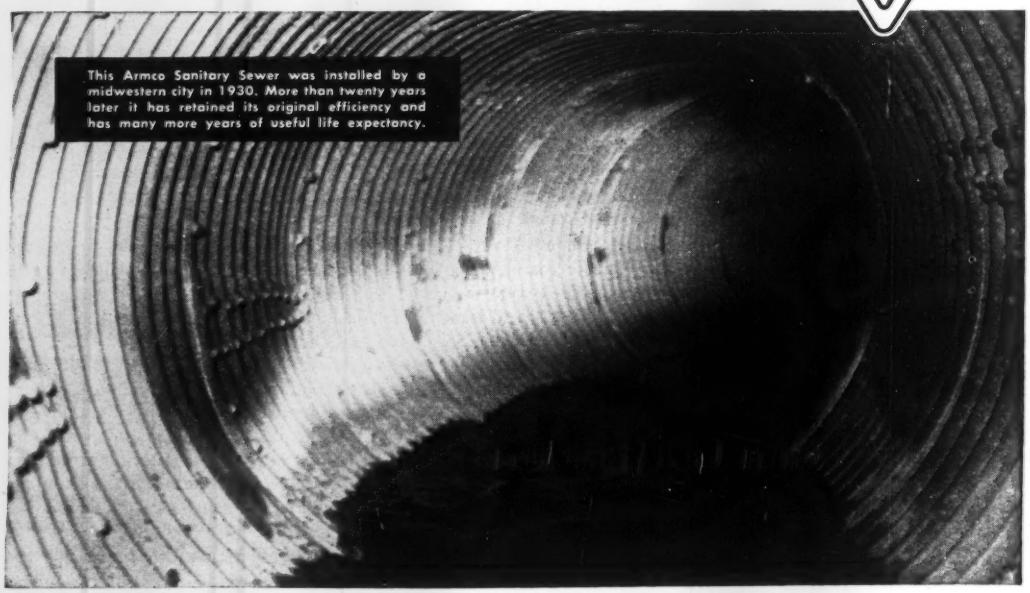
Armco Sewers meet these requirements. Long lengths help bridge soft spots in the foundation. Sturdy coupling bands assure tight joints and a continuous conduit of uniform strength that will not open up or pull apart. The proved strength of flexible corrugated metal design is assurance against crushing or cracking.

And no matter what service conditions are encountered there is a type of Armco structure to meet the exact requirements. Erosion is handled by Armco PAVED-INVERT Pipe. For severe corrosive conditions there is durable ASBESTOS-BONDED. Easily erected MULTI-PLATE is ideal for large structures and either Standard Corrugated or MULTI-PLATE PIPE-ARCH will save time and money when headroom is limited.

Write for complete information regarding your specific needs. Armco Drainage & Metal Products, Inc., 1172 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO SEWER STRUCTURES

ARMCO



This Armco Sanitary Sewer was installed by a midwestern city in 1930. More than twenty years later it has retained its original efficiency and has many more years of useful life expectancy.

• **Military money to keep coming**—One place where there won't be too much economy—no matter who holds the White House lease after Nov. 4—is in military construction spending.

Best guess, as military men sit down to struggle with the budgets they will present to the new Congress is this: The military will ask for construction authorization of between $3 billion and $4 billion. This will represent a drop in programs for the Army and Navy—but a high figure for the Air Force, which has to find some place to put the 143-wing unit that Congress has authorized. A money bill—to follow the authorization request—probably will call for a billion less cash than it does authorization, since the Pentagon needs authority to get contractors started on work, often doesn't need the full cash for a couple of years.

• **Water fight gets third side**—The long squabble between Arizona and California over rights to Colorado River water may be heading toward solution before the U. S. Supreme Court.

The hopeful sign is last week's announcement that the U. S. will intervene in the action, in response to requests for such a move by California (which is being sued by Arizona, as reported in ENR Aug. 21, p. 25).

Background: Back in 1936, a similar suit foundered when the court ruled that it could not adjudicate the matter unless the U. S. was party to the suit; Congress never has passed legislation giving consent to be sued in the matter; Arizona didn't name the U. S. in its latest action. California wants to get the matter settled—hence the request that the government file a petition to have its power and rights on the Colorado declared.

• **Turnpike troubles**—Caught between economics and the law, West Virginia's Turnpike Commission has asked Gov. Patteson for permission to build a two-lane road, thus neatly dropping a nasty problem back in the governor's lap. Engineers figured that tolls wouldn't support the planned four-lane road which would have cost $150 million (ENR Sept. 18, p. 26). So the commission figured the answer would be to build the road with two lanes (with a third lane on hills for truck traffic) for an estimated $96 million.

Trouble started immediately—with arguments that a two-lane road would violate terms of the act authorizing the highway. The state's attorney general finally ruled that such a program was in fact illegal, and the governor ordered the construction of a "multiple-lane" super-road. Added trouble piled up: The $96-million bond issue, sold in April, was now in jeopardy, and bankers asked a federal court in Charleston, W. Va., to determine legality.

As of last week, the outcome was still badly obscured, by political, as well as economic and legal matters.

• **Action on toll roads**—Look for a boost for toll roads from the auto manufacturers. Up to now, the auto industry has been cool to the trend toward toll roads. But as traffic congestion keeps piling up—and threatening the utility of their products, the auto makers are showing signs of a shift.

There'll be plenty of action on this issue when the new Congress meets.

• **L. A. housing a must**—If you'd been making bets on the basis of items on this page you'd have made money quickly on one—the Los Angeles housing matter. The U. S. Supreme Court, as predicted (ENR Oct. 9, p. 19), in effect, affirmed a California state supreme court ruling that despite a change of heart, the city of Los Angeles must carry through on commitments to build a 10,000-unit public housing project. The high court refused to review the state court's decision—in effect, affirming it.

The most promising new development in highway construction is the use of natural rubber powder in asphalt road surfacing. Ten countries and seventeen states in the U. S. A. now have test stretches of rubber roads. One of the most heavily travelled highways in Holland has a rubber road that has required no maintenance in over fifteen years.

If you are interested in pavements with more elasticity, with less susceptibility to temperature variations, less brittleness at low temperatures, and more resistance to shock and vibration — in other words, more wear at less cost — then you will want to know more about rubber roads.

We suggest —

FIRST, write for a free copy of the 52-page booklet — "Stretching Highway Dollars With Rubber Roads". This booklet gives the whole story on the history of rubber roads, and describes in detail the test roads using natural rubber powder that have been laid in the United States and Canada.

SECOND, ask for a free showing of the new motion picture — "Stretching Highway Dollars With Rubber Roads". Produced by the United World Division of Universal Pictures, it is a 16 mm., 30-minute sound presentation of the rubber road story to date, including actual showings of test roads, the opinions of the highway engineers who have laid them, and a tour of the Natural Rubber Bureau Research Laboratory, in Rosslyn, Virginia.

Natural Rubber Bureau

1631 K STREET, N. W., WASHINGTON 6, D. C.

NATURAL RUBBER BUREAU RESEARCH LAB.... 1101 Lee Highway, Rosslyn, Va.

Rift widens over bid shopping

The Associated General Contractors last week launched a campaign to improve relationships between general contractors and specialty contractors—and ran into new difficulties.

The powerful National Electrical Contractors, at its convention in Chicago, drafted plans for an all-out effort to push legislation through the next session of Congress to halt bid shopping by general contractors.

The NECA action not only ignored the AGC's peace effort; it amounted to a full-scale declaration of war.

• **AGC's overture**—In line with a resolution passed at its fall convention (ENR Sept. 18, 1952) the AGC sent out to its chapters last week a full statement of policy on contractor-subcontractor relationships.

The statement reaffirmed AGC's opposition to bid depositories, naming subcontractors in bids for public works, and separate contracts. It restated the section of AGC's "Code of Ethical Conduct" that applied to relations with subcontractors. And it broadly suggested the AGC would try to set up joint cooperative committees with subcontractor associations similar to those it now has functioning with the American Institute of Architects, the American Society of Civil Engineers, the American Association of State Highway Officials and other important construction industry groups.

AGC's conciliation move stemmed from a controversy which arose during the last session of Congress over S. 2907. The bill was sponsored by three subcontractors' associations, with NECA playing the leading role.

Purpose of the legislation was to require general contractors to name subcontractors and the amounts of their bids in bids for general contracts on public works. After hot debate before a Senate subcommittee, the bill was tabled.

The main purpose of AGC's new campaign is to keep the controversy within the industry—settling differences by mutual agreement and without resort to legislation. The NECA has now made it clear that the AGC goal will be difficult to accomplish.

In fact, the rift between the AGC and the NECA seems to have widened considerably. The AGC's statement of policy and a letter extending to NECA an invitation to consider intra-industry cooperation were sent by AGC president Arthur S. Horner to president D. B. Clayton, Sr., of NECA in advance of the NECA convention last week. It appears that NECA did not receive it, or deliberately chose to ignore it. It was not mentioned or discussed at the NECA convention. NECA officials denied any knowledge of the proposal.

• **What NECA heard**—If NECA remained silent on AGC's proposal, it was far from silent on bid shopping. Instead, NECA beat the drums loudly for renewed efforts to pass S. 2907 at the next session of Congress.

In one of the key addresses to the convention Senator Harley Kilgore, co-author of S. 2907, described its origin and purposes. He cited the reasons behind it:

1—The tendency of federal government construction procurement agencies to favor cost-plus-fixed-fee work that excluded specialty contracting firms from bidding. "We found indications of gross waste and mismanagement in the operation of some of these projects."

2—Complaints of unethical competition on competitively bid lump-sum jobs "arising from the shopping of bids by general contractors and the peddling of bids by unscrupulous subcontractors."

In searching for a solution, Kilgore said legislation requiring separate contracts was considered, but dropped because it "did not completely cover the evils confronting us." Instead S. 2907 was drawn up with these two principal provisions:

1—On cost-plus-fixed-fee construction, general contractors would be prohibited from doing mechanical specialty work themselves or from employing "inexperienced and incompetent newcomers."

2—On lump-sum contracts, general contractors would be required to reduce the amount of a contract price with the government if the general contractor saved by shopping a bid.

• **What NECA did**—Kilgore's address merely added fuel to a fire already raging in committee rooms, and quickly moved it out onto the convention floor. NECA approved a report of its governmental affairs committee made by Chairman C. W. Moseley, Charlotte, N. C., proposing six objectives for the coming year. Three of the six were aimed at bid shopping, and these were the first three on the list:

1—"To stamp out bid shopping and bid peddling, through passage of S. 2907 and companion bills whose legislative positions were reported to be very good. The bill would accomplish this by requiring the general contractor on government work to name his subcontractors and their prices at the time he submitted a bid; and require the general contractors to use these subcontractors unless they defaulted or he remitted to the government the monetary savings accruing to him from obtaining a lower sub bid. This would take the incentive out of bid shopping. Plans are to try to extend the program to include private as well as public works.

2—"To restrict the unfair competition involved in unqualified general contractors' undertaking mechanical specialty work with their own forces on cost-plus jobs, the bill would prohibit inexperienced newcomers in the mechanical specialty contracting fields from doing this work so they could subsidize (on taxpayers' money) establishment of mechanical specialty departments in their own organizations.

3—"Appointment of a watchdog Senate committee to see that federal construction agencies operate equitably, legally and prudently in their expenditure of public funds and see that all provisions of S. 2907 are rigorously enforced."

If there was any doubt remaining, that NECA is planning an active campaign to secure passage of S. 2907, the convention cleared it away by passing a special resolution.

The resolution charged that some general contractors are subcontracting electrical and other specialty work to wholly owned subsidiaries, and "reserving to themselves the performance of a large part of the management function connected with the execution" of this work.

It called on all its members and all others "who are familiar with the operations of the construction industry to discuss this situation with their Senators and Representatives in Congress and to report to NECA headquarters full details concerning any of these cases which come to their attention."

Power pact signed to supply Ohio A-bomb plant; more work mapped

• Power is biggest

With a sense of history in their undertaking, officials of the Atomic Energy Commission and the recently formed Ohio Valley Electric Corp. sat down this week in Washington to sign the largest single power-supply contract ever negotiated.

Under terms of the contract, the firm, composed of 15 electric companies, will furnish all of the power needed for construction and operation of the AEC's Ohio Valley uranium-235 plant. This amounts to 400,000 kw of power for construction purposes, and up to 1,800,000 kw for operation of the AEC plant. Total cost of the power facilities is an estimated $400 million.

To carry out the contract, these construction items are involved:

- Two huge buildings to house the eleven or twelve 200,000-kw steam-generating units that are to be installed. These units equal the largest units now in operation.
- Several hundred miles of 330-kv transmission lines, also equal to the heaviest now in service. The lines are to carry energy from the generating plants to the AEC switchyard.
- Conduits to bring large amounts of cooling water from the Ohio River to the plants for use in condensing the steam from the boilers.
- Construction of a network of transmission lines linking the 15-company group with the site of the AEC plant for transmission of interim construction power.
- Docks and open storage facilities for handling the millions of tons of coal that will be used annually to fuel the generating plants.

When completed the electric generating capacity of these two plants will be more than half the installed capacity of the system which now serves New York City. It will be nearly 2% of the total capacity in the entire U. S.

But Tennessee Valley Authority will continue to rank as the AEC's number one power supplier. It is already supplying the Oak Ridge installation with an undisclosed amount of power and is committed to serve half the initial power required at the Paducah, Ky., gaseous diffusion plant. On top of this, AEC is also committed to add some 1.7 million kw of capacity for expansion of the Oak Ridge and Paducah plants.

• **Private venture**—Nor is the Ohio Valley Corp. the first large-scale private enterprise venture into the AEC power-supply field. Electric Energy, Inc., made up of five electric companies, already has a 625,000-kw plant nearing completion to carry a share of the Paducah load, and will add another 210,000 kw of capacity to help take care of expanded operations at Paducah.

In size and expenditure, however, the undertaking of the Ohio Valley Corp. exceeds any power-supply contract written by a private power supplier financed with private capital.

Heading the 15-company group is Philip Sporn, pioneering engineer in the generating and transmission field and president of the American Gas and Electric Co. At least two AG&E subsidiaries are members of the 15-company group that makes up the Ohio Valley Electric Corp.

Negotiations between the company and AEC have been under way since last year on a tentative basis. Only after Congress appropriated money for the AEC expansion in early July did the negotiators have firm figures with which to work.

• But road plans are big

While AEC and power company officials in Washington were mapping a solution to power-supply problems, state and local building experts in Ohio were grappling with less spectacular but equally urgent construction problems.

Location of the $1.2-billion atomic energy plant near Waverly in Pike County has thrown the area into a fever of planning. Highways must be widened and strengthened; homes, stores, and schools must be built; water supplies and sanitation facilities must be provided; utilities must be expanded.

Ohio Highway Director Samuel O. Linzell has a crew of engineers in the district studying details of a $38-million highway improvement program to be completed in the next five years.

The major proposed improvement would make U. S. Route 23 a four-lane highway between Chillicothe and Portsmouth (see map), part of this work may be included in lettings to be completed by the peak of construction in the spring of 1954, the rest would not be completed until the plant is in full operation in 1957.

Bridge strengthening projects along Routes 23, 124, 348, and 104 will be included in the early November lettings. Last week the state highway department announced bids will be opened Oct. 28 for two bridge jobs on Routes 124 and 348.

Linzell said the state currently has only $1.5 million available to finance 13 "immediate urgency" projects in the area costing $3.1 million. He said Thomas H. MacDonald, U. S. Public Roads Commissioner, has promised aid averaging 65% of total construction expense. But additional appropriations will have to be obtained from Congress.

The Bureau of Public Roads is making a survey of the situation for the AEC, which then will have to make recommendations for highway needs to the Secretary of Defense, whose final approval is needed. Only these federal projects will be started this winter: one or two bridges on Route 23, and a temporary entrance to the plants.

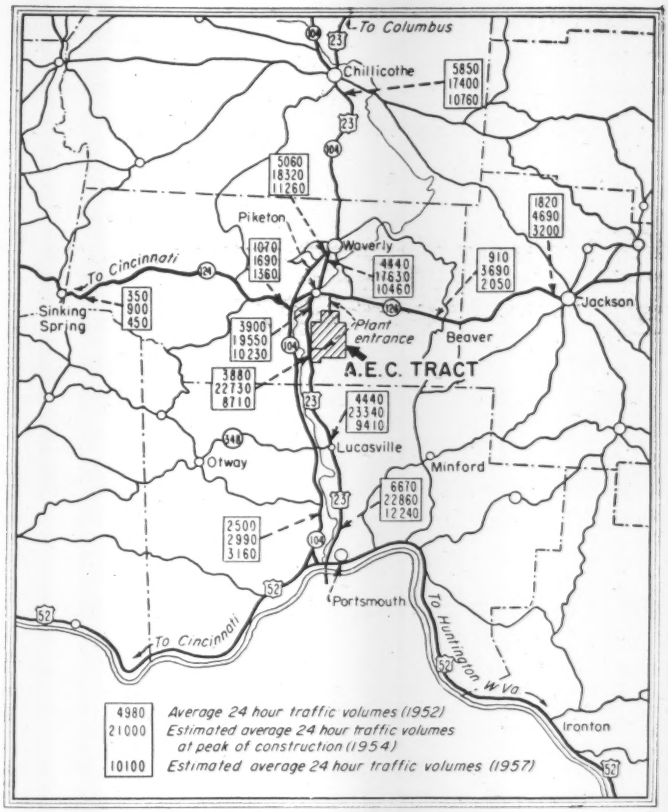
• **What's needed**—After "immediate urgency" projects are completed Linzell lists a second group of nine projects costing an estimated $15 million for completion by the spring of 1954 when the peak of construction is expected. They are: widening Route 23 to four-lane highway; new bridges, etc., for 29.07 miles in Pike, Scioto, Ross and Pickaway Counties; improvements on Routes 104, 124, in Pike County, plus line and grade changes for about 40 miles of county highways in Pike and Scioto Counties.

In the third and final group, necessary to handle traffic when the atomic plant is complete and in use in 1957, are 10 projects costing $20 million. They include: Construction of 40-44 miles of four-lane highway on U. S. Route 23 in Scioto, Pickaway and Ross Counties; improvements to State Route 348 and U. S. Route 52 in Scioto County, and State Route 124 in Pike County.

MacDonald said a proposed 21-mile road to run northwest from Piketon and funnel traffic from western Ohio to the plant, may figure in "overall" plans. Also under study by federal roads engineers is a bridge across the Scioto River to connect U. S. Route 23 and State Road 104 near the plant.

• And more is ahead

Early Washington estimates put the peak of the construction force at around 27,000 workers, to be reached about Sept. 1954. Some 2,000 plant workers might be on the job by that time; after this date, the total number of workers at the site will drop sharply to the permanent production force of about 4,200. By Sept. 1953, there will be about 16,000 workers on the job, according to the present construction schedule.



AN ESTIMATED $38 MILLION will be needed to improve the highway network feeding the A-bomb plant area.

Impact of the new AEC plant on housing and community utilities—water and sewers—can be pretty well absorbed by established towns within the area. That is the outlook as Housing and Home Finance Agency sees it on the basis of preliminary surveys and recent experience with other big AEC projects at Savannah River and Paducah, Ky.

When the project hits its employment peak of some 29,000 two years from now, there are expected to be about 14,000 immigrants on the payrolls of the construction contractor and AEC. Of the immigrants, probably 8,000 will move families in.

Existing communities are believed capable of absorbing a good part of this added population. The capacity is expected to show up in three ways:

1—There appears to be no need for corresponding increase in service population for the added load.

Added help that is needed can be recruited almost entirely from the resident population, it is felt. In other words, the immigrant growth won't mount to much more than 14,000 site workers, with 8,000 families.

2—The existing residential facilities of surrounding communities can be stretched to take care of the incoming load. Early estimates lead to a belief that a total of 2,000 programmed defense housing units, erected by private builders with FHA insurance, will fill the need for this type of financing.

In its initial program, announced this week for the area, HHFA authorized 1,000 permanent houses and 400 temporary dwellings. The temporary houses—to be built by the government—probably will be portable units.

Permanent housing in the initial program consists of 750 rental units and 250 for sale. Selling price of the sales housing is limited to $10,500 for a two-bedroom house and $11,500 for three bedrooms. Rent for the rental units ranges from $65 a month for a one-bedroom dwelling to $85 for three bedrooms.

In making commitments with builders who want to construct programmed housing, HHFA will give preference to locations in established communities nearest the sites that have existing community facilities. Four or five housing projects have been awaiting the announcement of the initial program. They are expected to move ahead quickly.

Along with these houses, it is expected that private builders at the same time will put up about 1,000 houses financed in other ways, by FHA or conventional loans. Already under way is one large trailer camp near Piketon. Others will be needed to house the 1,500 construction workers expected at the plant site yet this winter.

3—The additional housing units can be accommodated pretty generally by the existing capacity and facilities of the water and sewer systems. The housing is expected to go into established communities. Portsmouth and Chillicothe will take many of the new units; others will go into smaller places like Jackson and Waverly.

In general it is expected that the present sewer and water facilities will not require much duplication, expansion or replacement to obtain greater capacity. Although Waverly, a town of 1,800, is the only town in Pike County with sewage facilities—sufficient for 2,500.

Waverly already has acted to expand its waterworks and sewage disposal facilities by employing Alden E. Stilson and Associates to make a survey. Stilson indicated needs would require expenditure of $151,000 for water plant and $135,000 for sewage facilities to meet the needs of 5,000 population—or $661,500 additional to bring requirements up to par for 10,000 population.

•AEC policy—AEC at Portsmouth is adhering to its positive policy of letting the housing agencies and other responsible government services take care of worker needs. From sad experience at Oak Ridge and Los Alamos, AEC knows that government towns are not the best thing for its permanent employees—nor for the operating agency.

Temporary dormitories for single men are the only housing facilities that AEC might undertake. But the Portsmouth situation will have to develop before the commission can know whether any worker dormitories are needed to supplement private accommodations. If necessary, AEC undoubtedly would follow Paducah practice rather than the less successful Savannah River system of barracks for single workers. At Paducah the dormitories are on the project site and are

operated by the government. The first installation for 500 men was filled up at once; it has been added to since then.

To coordinate activities of the federal agencies participating in the housing and community facilities programs for the four-county critical defense area, the Office of Defense Mobilization on Sept. 12 named A. C. Newell as coordinator. His office is set up in Portsmouth.

• **School dilemma**—Present legislation provides no federal aid for educational facilities in critical defense housing areas. This means that for the school year beginning in Sept. 1952, there will be no additional facilities built in the southern Ohio area around the site of AEC's new $1.2-billion plant. The last provision for such construction expired June 30, 1952. Statutory deadline for filing of applications was July 1.

Assuming about 16,000 workers on the job by Sept. 1953, Office of Education figures that this means an increase of something over 3,000 school-age children in the area.

From experiences at Paducah, and Savannah River, S. C., however, they expect few of these children to hit the schools before the next school year. It is hoped that by the time next summer rolls around, Congress will appropriate funds for more construction in these critical areas.

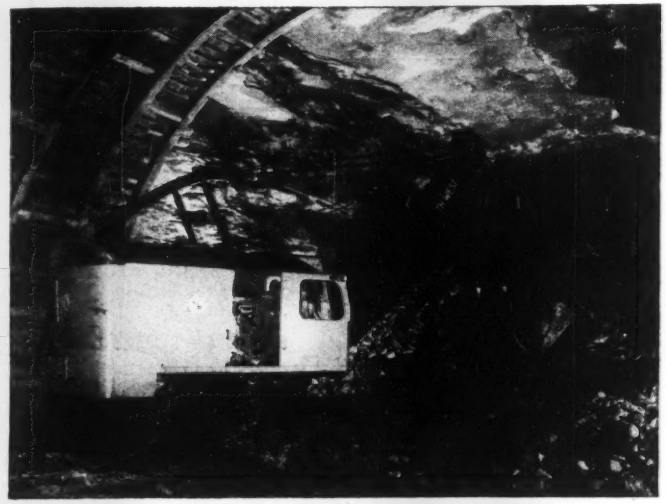
When given the go-ahead signal, the Office of Education will proceed with construction of temporary school buildings. Prefabricated frame or steel structures will be used, since the construction period will last only a few years, and the buildings will be of no use after the great mass of construction workers leave the area.

• **At the site**—Borings are under way to determine soil type so the builder—Peter Kiewit Sons Co. of Omaha, Neb.—can determine foundation and other details.

Earth-moving machines already are busy, moving the earth for temporary structures to be built for office and tool-storing facilities. Surveyors are everywhere—surveying for the AEC, for the state, for the contractor, for the railroad.

The Norfolk and Western Railroad is building spurs to the plant site to handle material for construction activity, and later for atom-breaking.

The Chesapeake and Ohio Railroad and the Detroit, Toledo and Ironton Railroad, with lines across Pike County, are adding facilities. In the planning stage are projects to improve telephone and gas service in the area and a $800,000 airport at nearby Minford, Scioto County.



BIGGEST TUNNEL job on the North American continent is five-mile twin bore for Sir Adam Beck No. 2 hydroelectric plant at Niagara Falls, Ont. Shovel with stubby boom mucks top drift of 50-ft dia tunnel in section holed through last week.

First holing through for Niagara bore

The cavernous top drift of Sir Adam Beck No. 2 Generating Station hydro tunnel was more than adequate to contain ceremonies in celebration of the holing through of that tunnel's first section last Friday.

The crowd wasn't small. More than 500 tunnel stiffs and public officials stood around the brilliantly decorated speakers' stand 200 ft below the city of Niagara Falls, Ont., while the Canadian Broadcasting Co. recorded proceedings for a network program that evening.

Climax of the ceremonies was a 15-delay series of blasts that opened the Tunnel No. 1 heading between Shafts 3 and 4. This heading is being driven by B. Perini and Sons, Inc., of Framingham, Mass., Walsh Construction Co. of Davenport, Ia., and associated Canadian and U. S. contractors.

• **Need for seaway voiced**—Pushing the button to set off the hole-through blast was Lt. Gov. Louis Breithaupt, the Queen's Minister to Ontario. Governor Breithaupt had just said, "I hope before long someone will have the pleasure of pushing the button that releases the power of the St. Lawrence Seaway Project."

In referring to the seaway, he echoed the sentiments expressed by Robert Saunders, chairman of the Hydro Electric Power Commission of Ontario, owner of the Sir Adam Beck Project.

Citing Canada's sharp industrial growth in recent years, Mr. Saunders noted this project's significant contribution (first power in 1954) to industry's need for greater power. He went on to say that Canada must have St. Lawrence Seaway power soon.

• **Praises work**—Mr. Saunders paid particular tribute to the effective tunneling progress that has been made by the contractors, headed by Louis R. Perini. Ground was broken for Shafts 3 and 4 June 30, 1951, and in April, 1952, top headings were turned from the shafts. Last week's holing through took place 3,100 ft from Shaft 4 and 2,350 ft from Shaft 3.

This work has been pushed as a top drift 28 ft high and 50 ft wide. Top-drift equipment now is being moved to a new parallel Tunnel No. 2 location, where the new tunnel's companion bore will be driven. Meanwhile the first hole will be benched out to full size.

The Perini combine has about half of the project's five miles of twin bore. The remainder is held by Rayner-Atlas, a group of Canadian contractors.

When completed, the tunnels will carry water from above Niagara Falls to a two-and-one-half-mile open conduit, which in turn will feed a new 1,200,000 hp generating plant on the wall of Niagara River's gorge.

Key men at the job site include Jesse R. Glaeser, Perini project manager, and Gordon Mitchell, Ontario Hydro's project manager. Hew Scott is top Rayner-Atlas man.

Ground broken for two major dams; one with fanfare, the other without

U. S. Army Engineers last week started construction on two $80-million dam projects, but groundbreaking at the two sites presented a sharp contrast.

● Table Rock Dam

With appropriate ceremony last week (Oct. 10), the Army Engineers broke ground for the $80-million Table Rock Dam on the White River 40 miles south of Springfield, Mo., just upstream from the Arkansas state line.

Lt. Gen. Lewis A. Pick, Chief of Engineers, was present at the start of the big project, one of the few new starts permitted under 1953 appropriations.

Bids for the massive dam, a concrete gravity structure 272 ft high, will be taken early in 1953. At present, drilling and grouting are under way with local labor. Six days before the ground breaking, bids were opened for an access road contract exceeding $450,000. The 1953 appropriations bill provides about $3 million to cover expenditures to June 30.

Table Rock is a flood control and power project with incidental recreational benefits. The reservoir will have a flood-regulation capacity of 760,000 acre-ft, supplementing Bull Shoals Dam downstream. Together, the two projects are designed to control the maximum flood of record.

Initial power installation at Table Rock will consist of two 42,000-kw units. Later, two additional units will increase the capacity to 168,000 kw. Power from the first unit is scheduled to go on the line in April, 1957.

The generating plant will serve a power market area in Arkansas, southern Missouri and eastern Kansas. This area contains many military installations and industrial plants important to defense. It also embraces the largest aluminum ore producing region in the United States.

● Tuttle Creek Dam

If bulldozers could tiptoe, they would have done so Oct. 7 when work began on Tuttle Creek Dam in Kansas. The $80-million project was started without fanfare when two bulldozers began nudging over trees, watched with idle interest by motorists on Kansas Highway 13, and presumably by silent clusters of bitter residents (ENR Sept. 25, p 23) of the area surrounding the dam, who for 14 years have opposed the construction of the facility.

The project, on the Blue River, 6 miles north of Manhattan, Kan., is the central project in the Army Engineers' Kaw River Valley flood-control plan.

The George Bennet Construction Co., of Kansas City, Kan., is contractor for the $2.2-million first phase of the project.

The first task is the construction of a temporary bridge across the Blue River at the dam site, a 30x623-ft structure. A major item, which must be completed in 400 days, is the construction of a $703,000 part excavation for the spillway. Also scheduled for initial work are placement of part of the upstream embankment, a test fill and construction of outlet works conduits.

The sometimes bitter opposition to the project on the part of landowners in the dam area is partly reflected in the present activities of Col. L. J. Lincoln, Kansas City District Engineer. He was busy meeting with landowners in the reservoir area who sought more information on selling their property to the government. Engineers already have acquired eight tracts at the dam site. Up to $325 an acre has reportedly been paid for the property.

Licensing scandal spreads in Miami

Howard H. Hill, former secretary of the Dade County, Fla., Board of Contractor Examiners, last week threatened to "blow the lid off" a licensing scandal that has rocked Greater Miami.

Hill is in custody for trial this week in Criminal Court on two charges that he took illegal fees for contractors' licenses (ENR Sept. 25, p. 23). Last week he said he was only a "fall guy" for a group of county and municipal building and zoning officials, and offered to tell all to a grand jury.

In a public statement, Hill said he got $50 monthly since April, 1950, from one of the largest construction firms (name undisclosed) in Dade county. He accused several officials in the county building department who he said received similar payments, one getting $100 a month. Until payments started, Hill said, the firm was in trouble with inspectors for faulty concrete work. After payments were made, Hill said concrete was poured at 3 a.m. when no inspector was around.

Hill named one city building official who he said asked him to issue an unauthorized license for a contractor. The official paid Hill $500, taking back $100 as his cut.

• **Other charges**—He said his superior forced him to issue illegal licenses under threat of being fired, naming the officials he accused. He also said a contractor building a large amount of Negro housing gave him a $125 watch and had other inspectors and county employes on his payroll for $50 a month in return for favors that were granted.

After issuing his statement, Hill went into a long conference with State Attorney Glenn C. Mincer. The Dade County Commission called a special session and demanded full grand jury investigation.

HOWARD H. HILL makes countercharges in licensing racket.

Later the same day Hill went before a grand jury and remained closeted with it for more than three hours. Mincer and Assistant John D. Marsh said they were considering subpoenas for every contractor and official named by Hill to affirm or deny the charges under oath.

Said Marsh: "It appears among other things that a favored few large contractors are able to go to certain employes of the county building and zoning department and obtain speedy service and reduce the waiting period to a few hours." In return, Marsh said, contractors tipped employes handsomely.

Higher vehicle taxes for highways favored by trucking industry leader

At the annual meeting of the American Trucking Associations, Inc., held in New York, Oct. 6-10, increases in gasoline and motor vehicle taxes were proposed as a means for speeding the building of highways. John V. Lawrence, managing director of the organization, said that he favored across-the-board increase in percentages of the present gasoline taxes and license fees in all states that do not now divert revenues that should be dedicated to the primary highways system.

Similar views were expressed by Walter Mullady, president of the ATA, who also urged members of the organization to give active support to the "Project Adequate Roads" program of the National Highway Users Conference.

On the controversial ton-mile tax question, Mr. Mullady told the ATA members that they must do more than attack such proposals. They must come up with sound alternative suggestions for new sources of revenue.

• **Highway situation reviewed**—A quick sketch of highway conditions across the country was given to the ATA members by the heads of five state highway departments: B. D. Tallamy of New York, D. C. Greer of Texas, C. R. McMillan of South Carolina, E. W. Kilpatrick of New Jersey, and W. A. Bugge of Washington.

No state of the union, Mr. Tallamy said, has an adequate highway system, and although $3 billion has been spent on the federal-aid system since the American Association of State Highway Officials made its 1949 survey of needs, the AASHO survey of last year showed that the total need has increased from $29 billion in 1949 to $32 billion as of last year.

• **Trunk system developing**—Mr. Tallamy pointed to the fact that the toll roads already built or definitely planned form a trunk system reaching from the Atlantic Seaboard to the Midwest, without benefit of long-range regional planning (ENR June 19, p. 23). An adequate survey of regional need, he said, might show that a trunk system of highways, designed for higher capacity vehicles, may be needed.

Both Mr. Tallamy and Mr. Bugge urged the ATA to support the state highway departments in their efforts to develop facts of this kind. Mr. Greer recommended that state ATA groups meet frequently with local highway administrators to keep informed as to their problems and to learn of ways in which they can help solve local highway problems.

Summing up the highway situation, Carl Fritts, head of the highway research work of the Automotive Safety Foundation, quoted Thomas H. MacDonald, Commissioner of Public Roads, as saying that this nation is losing ground at the rate of 5,000 miles a year. This is due, Mr. Fritts said, to four factors: (1) growth of traffic at a much faster rate than prewar trends indicated; (2) inflation; (3) shortage of critical materials; and (4) diversion of highway revenues and political interference.

• **Road tests discussed**—A strong plea for continuing support of the highway test programs now planned by state highway officials was made by Fred Burggraf, director of the Highway Research Board. He gave a brief account of the new test program now just getting under way in Idaho (ENR July 3, p. 36) and sketched even more quickly the still larger program set up by the American Association of State Highway Officials (ENR Aug. 21, p. 26).

The latter program, Mr. Burggraf said, will cost nearly $4 million, of which the trucking industry will be asked to supply about $1 million. If the economic studies that can be based on the results of this road test program are carried out, Mr. Burggraf added, the benefits to the trucking industry would be very great.

Raritan clean-up now split in two

The Raritan Valley, N. J., trunk sewer project suffered through another crisis in its somewhat stormy existence last week as up-river towns and industries refused for the second time to meet a deadline for joining in the valley-wide, $30-million pollution abatement plan (ENR May 29, p. 58).

Failure of the Middlesex County Sewerage Authority to enlist 100% participation in its project by an earlier (May 1) deadline brought the authority to order its engineers, Metcalf & Eddy, to refigure a partial plan. This was done; the new plan's cost is $22.5 million. And now, with exclusion of four key industries and four municipalities along the upper Raritan, the authority pledges a prompt construction start on its new project, a 21-mi interceptor and a 70-mgd primary treatment works (instead of 27 mi and 95 mgd as originally planned).

In the meantime, on Sept. 11 it was announced that engineers Whitman Requardt & Associates and Sheppard T. Powell (both of Baltimore) had been engaged by an upper Raritan group to report on construction and operating costs of an intra-Somerset County solution to the river pollution problem. The hiring group is called Somerset County Citizens Committee on Water Supply and Pollution. Its secretary, who announced the new group to local newspapers, is L. L. Hedgpeth, a technical consultant with the Calco Chemical Division of American Cyanamid Co., a major user of Raritan water.

Other industries in the new group are Johns-Manville, Sherwin-Williams and Diehl Manufacturing. Communities involved in the upper-river group are Raritan Borough, Somerville, Bridgewater and Manville.

A major expressed objection of recalcitrants to joining the valley-wide plan has been the loss of water supply in the river as wastes would be diverted to a sewer. The Middlesex Authority, an inter-county agency, offered Sept. 9 to meet this objection by building an up-river control structure to increase dry-weather flows. This offer brought no change.

Meanwhile, Gov. Alfred E. Driscoll has said recently that the state will permit no controversy to delay the Raritan Valley clean-up.

Code to allow fly ash

Reliable sources say the New York City Department of Housing and Building will recommend to the City Council that an amended bill to allow use of fly ash in concrete for building be acted upon favorably. Passage is then expected within the next month and will make the New York City Building code the first in the country to permit use of this material.

As amended, the bill, introduced by Councilman Hugh Quinn early this year, will allow fly ash to be used as an aggregate in amounts up to 20% of the portland cement content. Its use is limited to controlled concrete which will have to meet full 28-day design strengths.

Laboratory tests recently conducted with Consolidated Edison fly ash indicate that after 28 days the fly ash begins its action as a cementitious material to the extent of allowing about a 5% saving of portland cement. Full details will be reported when the New York City Council passes the bill.

Sewage works group urged to kick off shackles of tradition in the future

Arthur J. Fox, Jr.
Associate Editor

Poised at the vantage point of the first quarter-century of its history, the Federation of Sewage and Industrial Wastes Associations last week glanced briefly back at the past, then considered the problems of its future.

It has been 25 years of steady growth, and some growing pains, for the federation—from a few hundred members in eight associations to more than 5,500 active members in the present 37 groups. Last week's memorable birthday meeting was celebrated in New York City with attendance of over 1,150—topping a previous record by roughly 250.

Charles Alvin Emerson, significantly, served as historian for the occasion. Introduced by Wallace & Tiernan's W. J. Orchard as the fireman who fed steam into the boiler of the federation for its first 13 years, Emerson with the late George Fuller and others was active in sparking the organization's early activity.

One of several other "sparkplugs" present picked up where Mr. Emerson's historical review left off and gazed into the federation's future. Abel Wolman foresaw the following:

• **Walls to tumble**—"Some of the old edifices need to be destroyed. Standards (can become) a beloved area of lazy minds. Is it too late to simplify in both technology and structures?" asked the Johns Hopkins professor. He advised a middle ground between perfectionism and opportunism, and indicated that he looked to the profession's men under 40 for the ingredient of skepticism that would break down and rebuild outworn practices of the past.

Specifically, Wolman cited: Settling, why three hours? Filtration, why not mechanical? Sludge, perhaps total conservation. Garbage, coming back to the sewers. Sewage reuse, means new water supplies.

There was humor found in the recollection that an early problem sewage works operators aired in the federation's journal was foam; and a problem to which last week's meeting devoted half a day was froth. But foam was foam, and froth is something new; at least it is given a new name to set it apart as the nuisance caused at treatment plants, allegedly by some 1,200,000,000 pounds of synthetic detergents used in our homes each year.

There was no humor in discussions

CHARLES A. EMERSON—"If Fuller was the engineer, Emerson was the fireman." (ENR photo.)

of the detergent problem. No humor, nor any complete accord. Lawrence Flett, director of new products in National Aniline Division of Allied Chemical and Dye Corp., claimed that nobody has proved that detergents in sewage cause frothing at treatment plants.

Willem Rudolfs, of Rutgers University, admitted that there is as yet no direct proof, but he noted ample circumstantial evidence. He also expressed doubts about the wisdom of stating that detergents with their sanitizing effect don't affect bacteria active in sewage treatment processes. Citing the predominance of anionic detergent use, Professor Rudolfs suggested that a promotion of cationic detergent sales might help balance out annoyances. Lastly, he proposed that phosphates in the laundry products might be partly to blame for troubles now assigned to organic detergents, and called for a frank interchange of opinions on the whole knotty problem.

• **Industry in force**—A growing emphasis on industrial waste problems, which in 1950 caused the federation to change its very name, was forcefully evidenced in two full afternoon sessions.

Treatments for industrial wastes were reported and discussed at a lively session refereed by R. W. Hess, pollution research head of Chemical Aniline in Buffalo, N. Y.

Dissolved-gas flotation (ENR May 8, p. 55) was described in its industrial uses by developer Robert Baum and reported to be in its first test on municipal sewage in a pilot plant at Fall River, Mass. Results claimed: 69% reduction of suspended solids and about 40% BOD reduction with use of no chemicals—just air.

Spirited discussion of subsurface disposal boiled down to agreement that close control is the answer. The practitioners pumping petroleum and chemical industry wastes into 4,000 and 5,000-ft deep strata in Kansas and Michigan claim close control and no nuisance or danger. Others, fearful for groundwater resources decry an "out of sight, out of mind" philosophy and argue those wastes "should be kept up where we can see them."

Frank Woodbury Jones of Havens and Emerson received the Charles Alvin Emerson Award for meritorious service to the federation. E. Sherman Chase assumed its presidency, as reported by ENGINEERING NEWS-RECORD last week, and Louis J. Fontenelli, of Rahway Valley Joint Meeting, N. J., was elected vice-president.

Pick-Sloan price tag climbs $1.8 billion

The cost of the Missouri Basin development program (Pick-Sloan Plan) has climbed to $11 billion, increasing during the past year by $1.8 billion. The increase alone is greater than the estimated total cost of the plan when it was enacted in 1944.

The new figures were disclosed at Bismarck, N. D., in a report of a subcommittee to the Missouri Basin Inter-Agency Committee. It is the fifth of a series started in 1947, designed to show the call for funds for basin work.

About half of the increase is accounted for by three elements: 1—Increase in Army Engineers' proposals for the Kansas River sub-basin in Kansas, to cover 22 more flood-control dams—$272 million. 2—Increase in Bureau of Reclamation proposals for irrigation in Nebraska—$478 million. 3—Inflation has swollen costs by about 5% in the last year, as calculated by both the Army Engineers and the Reclamation Bureau.

Garbage menace ends

Omaha, Neb. will no longer dump its entire supply of garbage into the Missouri River (ENR Sept. 25, p. 28). Instead, Central States Corp., on a $2,500 monthly subsidy will process the garbage into animal food that it plans to sell for $30 a ton. About 80 tons of garbage daily will be ground, toasted at 300F and bagged. Tests show animals like it that way, Omaha officials say; and it's legal.

AERIAL VIEW of the $2 million St. Joseph, Mo., rescue operation to realign the Missouri River channel. At left is the 250-ft wide pilot channel that marks the future course of the river past St. Joe; 1,500 ft to the right is the river's course after it took off across country in last April's flood. The ends of the 8-mi loop that the river formerly traversed are visible at right; also the stone revetment that will hold the Missouri in its new course and the nearly completed dike work that will block off the river's flow through the cutoff. At the head of the pilot canal (see arrow) is the earthen plug that was blasted (see photo at left) to turn the river into its new channel.

Missouri is channeled to rescue St. Joe

Before last April's record-breaking flood, the Missouri River flowed past busy St. Joseph, Mo., in a huge "S"-shaped curve. One loop of the "S" was eight miles long; the other was seven miles long.

In the bight of the upper loop was Rosecrans Field, St. Joe's $7-million municipal airport. In the lower loop was Elwood, Kan. (pop. 1,200). Fronting on the river's curve were the intakes and outlets that served St. Joe's sewer system, its packing houses (the city's largest industry), the St. Joseph Light and Power Co. Two highway and one railroad bridge spanned the Big Muddy to the city of St. Joe.

When the flood came, the river cut across both loops of the "S". With half the volume of the river going through the cutoff and with Rosecrans field isolated, the upper break was the more serious. Although only 10% of the river flowed through the lower break at Elwood, it left the community stranded on an island that was without access by means of rail or highway.

Army Engineers repaired the Elwood break shortly after the flood water went down. A pile dike was constructed across the cutoff's head. This sealed out the river and returned it to its channel to end a threat that the channel might silt in, which would deprive St. Joe of water that it vitally needs.

The upper break posed a danger that was less immediate but more serious.

The break came at an abrupt right angle, which would make the river's course difficult to hold. Prospects were that the river would continue to work around until, eventually, St. Joe's water front would have been left silted in and dry. This would certainly have meant the end of St. Joe as it is known today.

• **Operation "rescue"**—Army Engineers moved fast to meet the threat. They designed a channel 1,500 ft east of the break through. It was laid out in a sweeping curve with an alignment that would be easy to hold in the future.

To turn the river, they planned to block off the old channel, and dig a pilot canal to lead the river on the course they wanted it to take. A solid bank of stone revetment would guarantee that the channel would stay where they want it to. It was a $2-million project.

Early this month (Oct. 2), with most of the construction completed, they were ready to turn the Big Muddy. Engineers, construction men, and civic officials gathered for a ceremony—Missouri's Gov. Forrest Smith pushed the plunger that detonated a 2,500-lb charge in the earthen dam plugging the pilot canal. Through the hole that had been blasted, the Big Muddy quickly swept back on its former course.

It was the climax to the rescue operation for St. Joe.

• **Project details**—Massman Construction Co. has the $292,817-contract for blocking the cutoff. It calls for constructing 4,410 lineal ft of piloting, driving approximately 2,500 piles to a 15-ft depth below the river bed. Of the total 1,900 have been driven. The remaining 600 will be placed as the flow of the river through the pilot channel increases.

The revetment work went to Condon-Cunningham Co. of Omaha on a bid of $779,690. It calls for 6,300 lineal ft of revetment. The work involved grading in the amount of 346,000 cu yd, placing 50,000 cu yd of random fill, and placing some 97,000 tons of quarry run stone in the trench fill.

Army Engineers dredged the pilot canal, which is 250-ft wide, 35-ft deep, and 9,000-ft long. A total of about 1,500,000 cu yd of earth was removed to do the job.

With a two-ft head to give it "oomph," the river itself is to gouge out the remaining 3,500,000 cu yd that must be moved before the channel attains designed size. On hand to give river an assist in getting the change completed before the ice run, will be the Engineers' dredge, Ste. Genevieve.

St. Joe, Missouri, has a new lease on life as the result of teamwork by the Engineers and contractors.

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

"Let Your Transit Do the Paper Work"

"It can be determined in the field, without calculation, whether or not a survey closes," says John Goggin, C.E. of Marathon, Florida.

On the Keys, John Goggin of Marathon, Florida, uses his Gurley transit for precision work.

"Down here on the Florida keys, land is scarce and credible monuments are few. In the absence of the usual landmarks, accuracy (I prefer the word *precision*) is paramount. We are, therefore, forced to use USC&GS monuments and local plane coordinates.

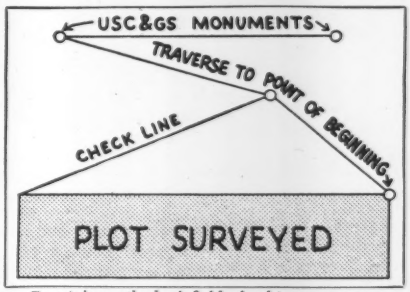
"But ordinary methods with their field calculations are time-consuming. And all field men are not good mathematicians. So we devised a fool-proof method in which the transit does a great deal of the calculating.

"Here's how we do it: Transit is oriented first on a line using the grid azimuth calculated from local point coordinates of USC&GS monuments. Compass is set to read True Bearing of the line. Instrumentman then traverses by azimuth to the point of beginning of the survey. At each change in alignment, a backsight is taken with telescope plunged or inverted—after making certain forward azimuth on the back line is still properly set. The compass is released, telescope erected and sighted on next forward point. The line is measured and azimuth recorded. Compass reading is also recorded as a check.

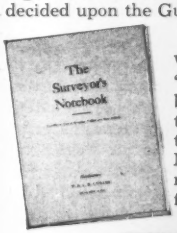
"Now the upper motion is unclamped and a backsight is taken with telescope erect and back azimuth *read*. With the upper motion unclamped, a foresight is again taken. This should check the original azimuth of the forward line.

"This operation is repeated at each change in alignment back to point of beginning, where the forward azimuth should read the same as the calculated value. Thus, *back* azimuths are read each time and *forward* azimuths are double checked. In addition, constant reference to compass readings is made and all observable points-in-survey or known coordinated points are sighted.

"Only an instrument of reputable *precision*, capable of standing hard knocks and rough usage, could be depended upon in performing this work. From long experience, we have decided upon the Gurley."



Goggin's method of field checking a survey.



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What's your story? We would like to feature it in a future page in this series. Drop us a line, outlining your idea. We'll contact you later for full details.

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How to Wrap a Project to Deliver Plus Performance

Maybe you're on one of those jobs now —where an "X" in equipment can hold out on the performance you're shooting for.

In a recent flood control project for example, vital discharge capacity had to be maintained under corrosive conditions. Specifications called for long life and provision for inspection and repair of seals, concrete and other vital parts to assure performance under peak loads.

A tandem gate system with 13 service and 13 emergency gates solved the problem. Emergency gates, located up-stream from service gates, could be closed to isolate service gates for inspection and repair. Seals designed for maximum performance were carefully machined for full bearing contact. And to resist corrosion and assure long equipment life, gate frames, gate leaves and conduit liners were fabricated of low-cost stainless-clad steel. Conventionally made leaves of corrosion-resistant material would have been exorbitant. Result: assurance that gates could be kept operable for flood peaks, plus corrosion resistance and assurance of long equipment life.

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IN AND OUT—David L. Cole, left, new head of the federal mediation service, talks with pipe-smoking Cyrus Ching, who resigned the post recently. (Wide World)

New mediator is on trial

President Truman got more than a new director of the Federal Mediation and Conciliation Service when he named David L. Cole as the country's top labor-dispute mediator. He got an expert in national emergency disputes he hopes will go far in getting management and labor to agree on some way to keep so many strikes from reaching the White House door.

For that is the assignment Truman handed Cole after persuading him to leave a lucrative law practice in Paterson, N. J., for an uncertain future in Washington. Cole replaces Cyrus S. Ching, who headed FMCS since it was taken out of the Labor Department and set up as an independent agency under the Taft-Hartley labor law in 1947. Ching, though 76, is himself embarking on a new career as a labor relations consultant in the nation's capital.

Cole's tenure, between now and next Jan. 20, when a new President will be installed in the White House, is pretty much a probationary period. He will submit his resignation at the end of Truman's term, and it will be up to the President's successor to accept it or reappoint him.

So the way he operates between now and then will be looked at closely by the two candidates' labor advisers. Cole is more or less a professional mediator, rather than a political partisan; indeed, his nominal party affiliation is Republican, so if his way of labor mediation pleases the winning candidate, he has no over-riding political blemish that would automatically prohibit his reappointment.

Cole didn't want Ching's job, had turned it down before. As an attorney, he was earning much more than the $16,000 government salary.

But after an hour in the President's office, Cole relented. Truman convinced Cole he needed him to get substantial management and labor agreement on some new rules which would keep labor disputes out of the White House—except as a last resort.

• **Program**—Cole is undertaking a three-point program to achieve this goal:

First, he will hold private talks with management and labor leaders, probing points on which they might agree with respect to keeping disputes away from the White House. Included will be those in the railroad industry, who have lived under the injunction-less Railway Labor Act.

Cole thinks there is considerable area of agreement. There would be little argument, for example, on letting a board of inquiry make recommendations instead of only finding facts. Or making it possible for the President to act more quickly when he wants to and giving him more leeway on what he can do. The idea of keeping the President out of the dispute until all other possible means have been exhausted would be welcomed, too.

But, no doubt, there would be difference of opinion on how these objectives could be achieved, specifically.

If the 1949 Senate's Taft-Hartley amendments had passed Congress, the President would have had the choice of injunction or seizure. Cole subscribes to the idea of giving the President a free hand so he can fit the weapon to the particular situation. For example: The injunction—when the union is the culprit; seizure—when the employer seems to be wrong. Or a different kind of seizure to fit the circumstances (such as confiscating profits, denying a wage increase). Cole says such threats ended the 1950 coal strike after the Taft-Hartley injunction failed.

The general idea of this approach is to keep both sides guessing as to what the government might do, so that they will be more inclined to bargain and settle. When one side knows what the government will do, it can sometimes manipulate the situation and gain an advantage.

Cole is also considering reviving the National Labor-Management Panel created by the Taft-Hartley law to advise FMCS. Truman set up a panel of front office executives, including General Electric's Charles E. Wilson, later defense mobilizer; Benjamin Fairless; Paul Hoffman; Philip Murray; William Green and others, but it never really functioned. Within three years, terms expired and the panel went out of existence. Cole may pick his panel from the second level of management, the industrial relations vice presidents, and get some practical advice.

Third, Cole will try to make the Mediation Service a more effective factor in collective bargaining.

He will ask for 25 more conciliators so that the "preventive mediation" tried by Ching can be put to real use. He will impress conciliators with the need for settling their cases themselves, and not passing them on to Washington.

Employers expressed little reaction to Cole's appointment. Reason: most

of them felt the Mediation Service was not important to them. Cole wants to change that.

• **Tests**—Cole has some big current disputes and strikes to put him to an early test.

In Washington this week federal conciliators worked hard to settle disputes of the International Association of Machinists, AFL, with Douglas and Lockheed, aircraft manufacturers. The IAM had been on strike two weeks against Douglas and three weeks against Lockheed—severely crippling jet plane production for the Air Force and Navy—when the strikes were suspended at Truman's request and the mediation sessions scheduled in Washington. Wages are the main issue.

Strikes begun in August still persisted at eight Borg-Warner divisions in the Midwest. They are part of the UAW-CIO's demand for corporation-wide bargaining which WSB refused to decide. That is no longer the issue. Settlements have been reached locally at three plants.

Since mid-August, the left-wing Farm Equipment Workers have been on strike at 10 International Harvester plants in Illinois, Indiana and Kentucky.

Then there is General Electric's dispute with the CIO Electrical workers, still unsettled.

• **Professional**—Like Ching, Cole is a Republican, but he practices it only in Paterson. Nationally, he considers himself an independent. He is 50 and a graduate of Harvard. In the early Wagner Act days, Cole represented textile manufacturers in the Paterson area. His relations with the CIO textile union were such that the union recommended him for chairmanship of the New Jersey Mediation Board, a post he filled from the period 1943 to 1945 under a Democratic governor.

Cole entered the national picture during the war when he sat on the National War Labor Board panel which recommended against breaking the Little Steel formula in the basic steel dispute. Since then he has attracted considerable attention by his service on key presidential boards, many of them breaking new ground in labor relations. Cole was a member of Truman-appointed boards which recommended:

• The 40-hour week for non-operating railroad employees in 1948.

• Non-contributory pensions, but no wage increase, for steel workers in 1949.

• The union shop for non-operating railroad workers this year.

• Against limiting the number of miles which airline pilots could fly in a month. (Dispute involved American Airlines, 1951.)

• Against featherbedding demands of operating railroad workers in 1951.

Cole sat on two Taft-Hartley boards of inquiry, both involving coal miners, in 1948 and 1950. In the earlier instance Cole got a settlement without an injunction.

Discharged Austin guard claims unfair practice

A Los Angeles construction company and the AFL hod carriers union were before the National Labor Relations Board last week to deny unfair labor charges leveled by a Pinkerton detective agent. The broad general issue is whether workers who are not actually employees of an employer are protected by the Taft-Hartley law from unfair labor practices by that employer.

In the case in point, the Austin Co. signed a contract with the Pinkerton National Detective Agency in which Pinkerton agreed to furnish three guards for Austin's motor construction project in Los Angeles. The guards were paid, assigned and worked under the sole direction of Pinkerton.

The hod carriers' business agent protested because the guards were not members of the local. The hod carriers represented other Austin employees on the job.

The guards belonged to another certified union: considered by Pinkerton as appropriate to their work. But the local business agent threatened to set up a picket line if the three men were not removed.

Austin and Pinkerton then agreed to cancel their contract and Austin made other arrangements for guard service. One of the guards affected by the cancellation filed separate charges against Austin and the union, saying he had been laid off because he was not a member of Local 300 of the hod carriers union.

Last February an NLRB trial examiner ruled in favor of the guard. The examiner found the language of Taft-Hartley broad enough to include the guards within the definition of "employee." He said the broad national policy of employee-employer relationships protects an employee against the party responsible for job discrimination because of union membership.

In oral arguments before the board last week both company and union lawyers denied that the guards could be considered employees of Austin since the company's conduct related only to Pinkerton.

One point, which was expected to appear in the arguments, never made it. That is: The Taft-Hartley law does not permit the labor board to certify a union as bargaining agent for guards if it takes other employees as members.

The board probably won't reach its decision before November. It will decide whether or not to enforce the trial examiner's recommendation that both the company and the union make up any loss suffered by the guards.

"Holiday" ends

The policy committee of the Cleveland Building Trades Council last week voted to end the "holiday" which had begun on Monday (Oct. 6) for 28,000 union members. "Holiday" was another name for jurisdictional strike (ENR Oct. 9, p. 31). The vote was in compliance with an order from Richard J. Gray, president of the AFL Building Trades Department in Washington. Work was resumed on Friday, Oct. 10.

Labor-contractor groups encourage new bricklayers

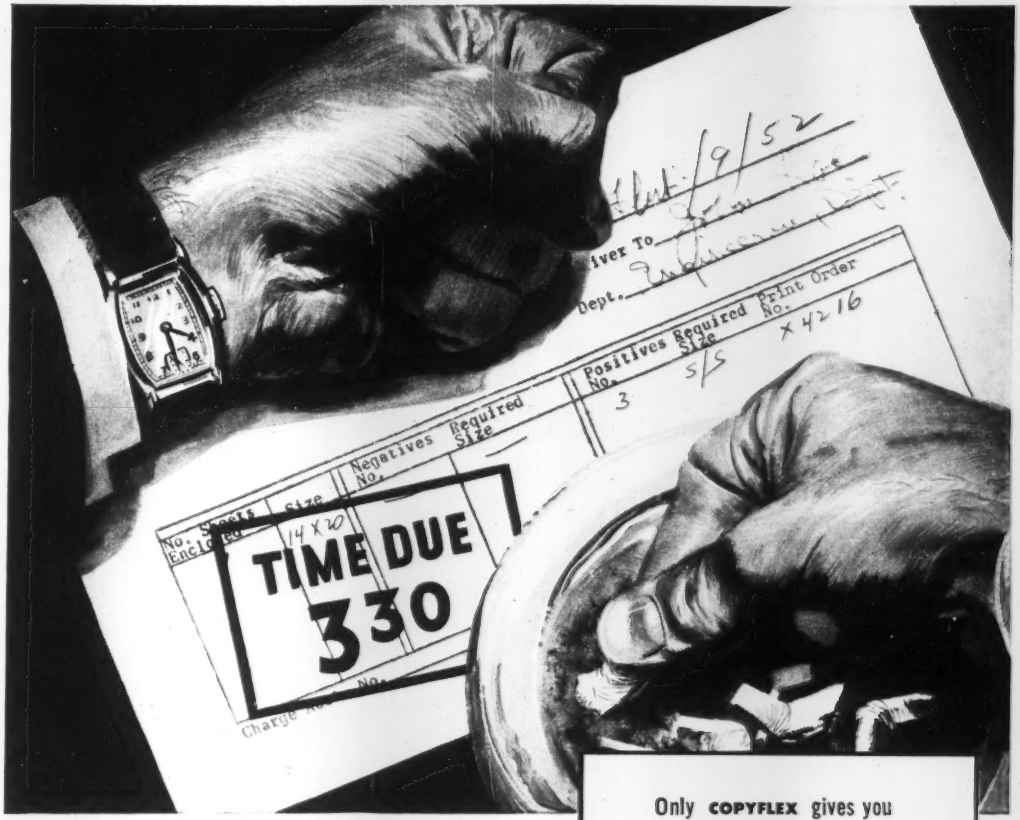
Every state in the country now has at least one labor-management group encouraging bricklayer apprenticeship.

An all-time-high figure of 462 such committees, composed of building and mason contractors and bricklayer union representatives, are currently operating. Nine of these are newly formed: Decatur and East St. Louis, Ill.; Portland, Me.; Newburgh, N. Y.; and the Texas communities of Paris, Midland, Big Springs, Lubbock and Abilene.

At the present time, about 4,000 young apprentices, many of them war veterans, are entering training each year within the union ranks, and about the same number are graduating as journeymen brick and tile masons annually after three or four years of training.

One new development in the apprentice field is the establishment of pre-job schools to train fledgling masons in the rudiments of the craft before they enter active apprenticeship.

Pre-job schools have been established in Youngstown and Dayton, Ohio; Albany, N. Y.; St. Cloud, Minn.; Louisville, Ky.; Baltimore, Md.; and Minot, N. D. (state-wide).



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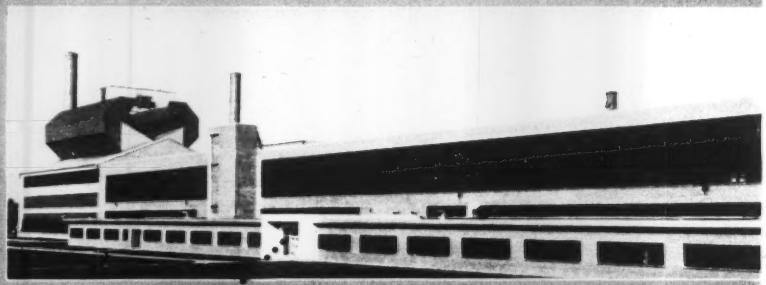
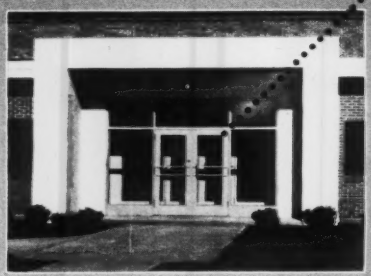


CORNING GLASS WORKS AT DANVILLE, KY.
Architects: Ward & Moore, Consulting Engineers, Corning, New York
Contractors: Dilmore-Dickman-Pickens Construction Co., Muskogee, Okla.



Richmond MD Door at entrance of Corning Glass Works Building. Other styles available:

The first thing you see when you enter the impressive, new Corning Glass plant at Danville, Kentucky, is the Richmond MD Door. Many other Richmond products are used throughout the building.

Richmond's handsome, new, industrial tubular steel door is becoming the first choice for many types of buildings such as office buildings, factories, schools, hospitals and hotels. Heavy duty construction and fine appearance give real quality appeal.

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TWO PRODUCTION LINES turned out six prestressed, precast beams per week for a highway bridge in Roseville, Ohio.

Builder finds prestressing can be taken in stride

CONSTRUCTION of the first prestressed concrete bridge in Ohio is proceeding at such a rapid clip that Russel Mason of the contracting firm of Wander and Mason, Inc., Worthington, Ohio, is convinced that "prestressed concrete will be competitive in first cost with more conventional types of bridges."

The prestressed bridge that Mason is building is a key item in a Muskingum County flood-control project, which also calls for relocation of Moxahala Creek and the raising of the present elevation of a county road above flood level.

• **Alternate design chosen**—The new structure will carry two lanes of highway traffic over the creek at Roseville, about 10 miles south of Zanesville. It consists of five 44-ft spans made up of prestressed, precast T-beams.

Prestressed concrete was chosen for this bridge under a bidding procedure that permitted alternate designs. The original design called for a 226-ft long, three-span continuous steel I-beam bridge. Bids were received from eight contractors and ranged from $91,235 to $143,983, averaged $107,600. The low bid was submitted by Wander and Mason, Inc., which also bid $101,700 for a prestressed concrete alternate, noting that the concrete bridge could be completed in 200 days whereas the steel structure would take 400.

The prestressed concrete design was accepted for three reasons, according to William Shuck, then president of Muskingum County Board of Commissioners: the short supply of structural steel, the claimed faster construction time for the concrete bridge, and an estimated less cost for maintenance.

• **Safety assured**—In accordance with Ohio law, plans for the alternate design were checked by the state highway department. They were also checked by Alden E. Stilson and Associates, of Columbus, consulting engineers for the county.

The bridge was designed for Ohio's SL5-46 loading, which is about the equivalent of AASHO H-20 loading. Investigation of one beam indicates a cracking load equal to dead load plus 2¼ times the live load, or 1.63 times the sum of dead and live loads, assuming a modulus of rupture of 700 psi. The ultimate load equals dead load plus 4.1 times the live load, or 2.58 times the sum of dead and live loads.

• **Composite construction**—Each of the five 44-ft spans consists of nine 30-in. deep precast T-beams and a cast-in-place deck slab bonded to the beams. Beams were chosen in preference to a poured concrete slab because the bridge is on a 45-deg skew and because headroom is not an important consideration. An 18 to 1 span-depth ratio for the beams was selected for economy.

To minimize the amount of formwork for the deck, the beams are placed with top flanges only 8 in. apart. Concrete is cast to a minimum depth of 4½ in. over the beams. It also fills the spaces between top flanges, making the total depth of the deck 7½ in. Dowels extend from the sides and top of the flanges into the deck to insure transfer of shearing stresses between the precast and cast-in-place components of the concrete.

• **Wires bonded**—Prestress is applied to each beam by thirty-two ¼-in.-dia cables, each composed of 7 wires of 0.0352-sq in. cross section. The cables have an ultimate strength of 260,000 psi, and were tensioned to 160,000 psi. Encased in the bottom flange, they transfer the prestress to the concrete through bond.

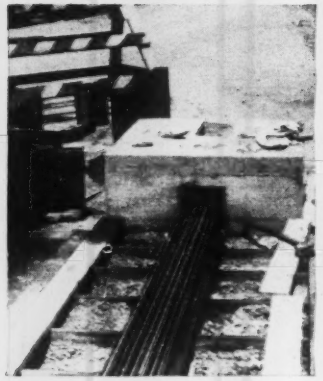
The design assumes that when the prestress is transferred to the concrete, the tension drops to about 147,000 psi due to compression of the beam. It is also estimated that the effective tension will be 133,000 psi after shrinkage and creep of the concrete takes place.

Corresponding prestress in the bottom-flange concrete is 2,000 psi at transfer and 1,600 psi ultimately. (Concrete must have a strength of 5,000 psi at transfer.) The prestress may create tensile stresses in the top flange, but these are limited to half the modulus of rupture of the concrete. Despite the low tensile stresses, nominal reinforcing is incorporated in the top flange as a precaution.

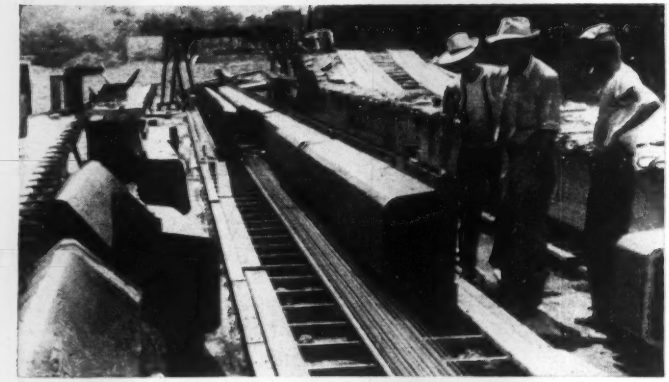
Under design load, there will be no tension in the bottom flange; live load decreases the compressive stress to just about 100 psi. At the same time, the compressive stress in the deck or in the top flange of the beam is less than 600 psi. Hence, lower strength concrete may be used for the deck than for the beams, which carry much higher stresses during prestressing. The design calls for 4,000-psi concrete in 28 days, with a slump not to exceed 2½ in. The leaner mix also is expected to reduce shrinkage of the deck.

Maximum shearing stress in a beam web will not exceed 200 psi ($0.04\ f'_c$). Hence, only nominal stirrups are used —one ⅜-in.-dia bar every 12 in.

Prestress is also applied transversely



ABUTMENT withstands 90-ton pull of prestressing strands.



PLYWOOD FORMS were erected alongside the strands. These wires were cut, transferring the stress to the beams, when concrete strength was 5,000 psi.

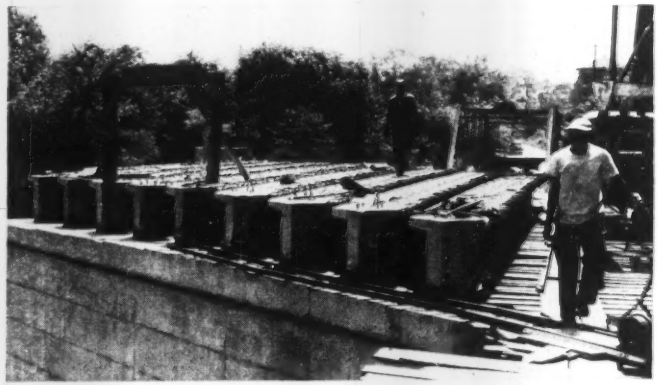
to insure good distribution of live loads in this direction. Beams in each span are tied together with four 0.6-in.-dia, 7-wire cables, with an area of 0.215 sq in. Tensioned to 125,000 psi, the steel extends through two cast-in-place diaphragms between the beams, and transfers the prestress through end anchorages. The diaphragms are parallel to the bridge piers and abutments.

• **Pretensioning plant**—The contractor set up his casting yard on an abandoned section of concrete road at the bridge site. Though the 16-ft wide road curved, he had sufficient length for a 145-ft stressing bed. He decided to use two parallel production lines, in each of which he could cast and prestress three beams.

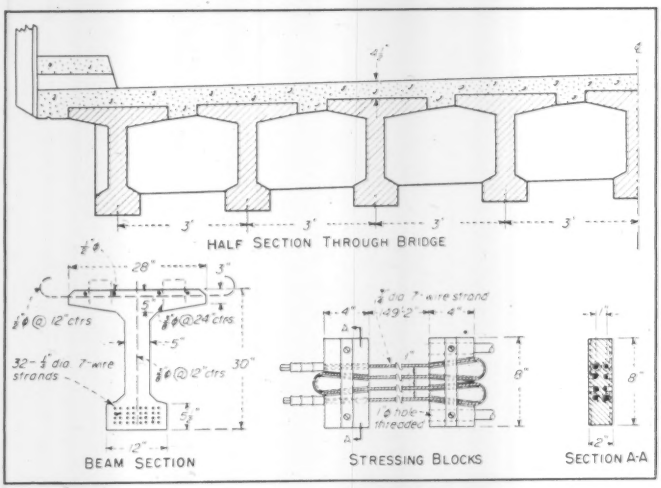
A five-step procedure was used: (1) Tension the strands; (2) place beam forms; (3) cast the concrete; (4) when the concrete had attained a strength of at least 5,000 psi, cut the wires between the beams with a torch; (5) move the beams into place on the piers and abutments.

To resist the 160,000-lb tensioning force applied to the 32 strands in each beam, the contractor built a pair of 4-ft high by 4-ft thick concrete abutments across the concrete road at both ends of the stressing bed. They transmit the horizontal thrust to the old concrete slab. Five piles anchor them against overturning.

• **Anchorage costs cut**—Strands were prepared for the prestressing operation on a bench 145 ft long. Each was cut to about 600 ft, somewhat greater than four times the length of the stressing bed. Sleeves for anchoring a strand after tensioning were pressed on the free ends with a hydraulic tool. The strand was looped to form four lengths about 150 ft each.



T-BEAMS were placed close together on the piers. Later, the bridge deck was cast.



BRIDGE BEAMS were prestressed with looped strands to cut down the number of anchorage sleeves required.

At the looped ends, the strand was inserted in slots in one face of a 4-in. thick steel block. A similarly looped strand was then placed in slots in the opposite face of the block.

This block also was used to tension the eight lengths of strand simultaneously. Thus, looping a single strand reduced the number of pressed-on anchorages needed from 64 to 16 per production line.

After the strand assemblies were moved to the stressing bed, the blocks were held in proper position by steel guides in the abutments. Then, pulling rods, 1 in. in diameter, attached to each stressing block, were fastened to a 30-ton jack. The strands were stretched until a calibrated gage indicated the proper force had been applied. At that time, the steel had elongated 12⅛ in. Steel shims were inserted between the stressing blocks and a steel bearing plate in the abutment to maintain the tension.

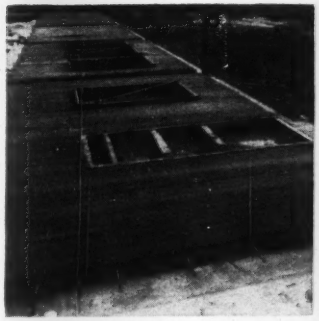
• **High-strength concrete cast**—Next step was the positioning of the beam forms. Three sets of plywood forms—one for each beam in a production line—were fabricated, planned for fifteen uses. Built in short lengths for easy handling, they were put in place rapidly, after which all the required reinforcing bars, dowels and stirrups were inserted.

Then, concrete made with 7½ bags of air-entraining cement per cubic yard and having a 2½ to 3-in. slump was placed in the forms. With 1% calcium chloride in the mix, 7-day strengths exceeded 5,000 psi.

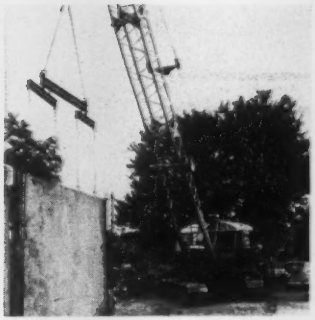
Forms were stripped within two days, and the concrete was cured for 5 to 7 days. When the concrete attained a strength of 5,000 psi, the wires were cut, but only a few strands at a time throughout the length of the line, to minimize beam movement when the stress was released.

Because of a shortage of storage space, the beams were erected as soon as they were fabricated. Traveling over a temporary wood trestle adjacent to the new bridge, they were moved to the proper span on dollies pulled by a truck. They then were shifted transversely across the piers into position on two dollies on a steel track.

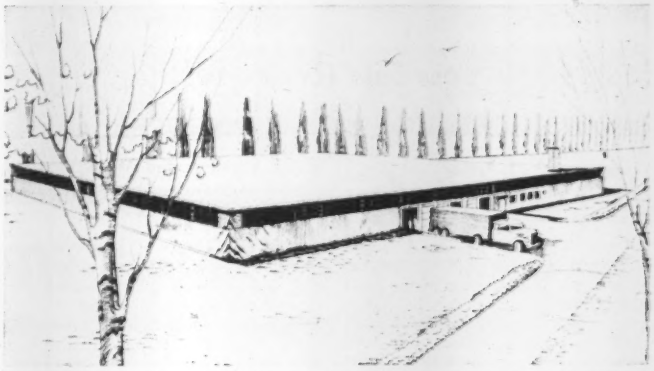
• **Cross prestress applied**—Strands for transverse prestressing were slipped through holes in the beams. These strands were wrapped with paper to prevent bond with the cast-in-place diaphragm concrete. The diaphragms and the deck were poured simultaneously. Finally, when this concrete had attained sufficient strength, the transverse strands were tensioned and anchored at their ends by tightening a nut on swaged fittings there.



WALL SLABS, with openings blocked out, were cast on the floor slab . . .



ERECTED at two dozen per day, they were handled easily by crane . . .



CONTINUOUS SASH and marble-surfaced corners complete the walls of this . . .

Warehouse tilted up for $5 per sq ft

A tilt-up-wall warehouse is being completed in East Hartford, Conn., at a cost of $5 per sq ft, excluding cost of land—but including heating and sprinkler systems. Forty-eight precast concrete wall panels enclose the one-acre Premier Foods storehouse. All 48 of the panels were erected in only two days.

Panels are 12 x 15 and 12 x 20 ft. They are 5 in. thick with ⅜-in. reinforcing at 18-in. centers. Outer surfaces are broomed for architectural effect and receive two coats of waterproofing compound. Marble-faced concrete blocks give corners of the building an extra esthetic touch. Light, therefore, can stream in over the tallest stack of goods to provide a pleasant contrast to the normal dingy warehouse interiors.

Steel interior columns carry a built-up roof 16 ft above floor level. Continuous sash rings the building in the 4-ft space between roof and top of panel-wall.

The warehouse's concrete floor slab was utilized as a casting bed.

O. Kline Fulmer and Raymond A. Bowers of Princeton, N. J., are the architects handling building design and construction supervision. Lewis C. Bowers & Sons, Inc., of Princeton, is the contractor.

Expand California city's composting operation

Operation of Compost Corporation of America's Oakland, Calif., plant has been suspended pending an expansion program, according to company officials (ENR June 26, p. 44). With the experience that the firm gathered during two years of process development, a standardized design of buildings and machinery is being developed by the office of J. Fruchtbaum, Buffalo, N. Y., consulting engineers.

Company officials say the new work is expected to cost $180,000 and will be completed by next spring. The new facilities will handle 225 tons of garbage and produce 100 tons of salable compost per day.

PIPE SECTIONS cemented together with plasticized sulfur cement and . . .

GLASS JARS similarly joined and immersed in water are two . . .

Easy ways you can strain-test sulfur-compound pipe jointing

W. J. Eney
Lehigh University
Bethlehem, Pa.

R. B. Seymour and W. R. Pascoe
Atlas Mineral Products
Mertztown, Pa.

There is plenty of sound, scientific evidence from which the waterworks engineer concerned about pipe-jointing materials can conclude that sulfur joints remain strain-free and ductile in service. Information both published and unpublished abounds on results of tests with SR-4 strain-gage and spectrograph.

Also—and fortunately for the waterworks man who reads of an occasional, though statistically insignificant pipe-bell failure (as in ENR Mar. 13, p. 62)—there are very simple tests he himself can run to retain his confidence in sulfur-compound jointing.

A simple experiment developed some years ago consists of pouring a disk or ring of sulfur cement in a glass jar and covering it with water. This test shows that under water an adequately plasticized sulfur ring or disk will neither crack nor break the glass, even when the test is continued for many months.

In another simple test, rings are cut from properly annealed 4- and 6-in. cast iron pipe. To reduce the strength of the pipe, slots can be cut in the circumference so that less than one-third of the original thickness of metal remained at the slots. Plasticized sulfur compounds are then poured as disks in these rings and as joints between concentric rings of two different sized pipe. The simulated weakened joints immersed in a stream of running water show no change after a two-month period. Similar results were observed when a vertical 5-ft length of 2-in. cast iron soil pipe was capped with a slotted cap and joined with plasticized sulfur cement, then water-filled.

A simple figure-eight briquette of sulfur compound partially embedding iron nails is another easy immersion-test device. Obviously, it is not necessary, or possible, for the average water supplier to run creep tests, spectrographic analyses, nor SR-4 strain gage investigations.

• **Material has improved**—Cast iron pipe used three centuries ago at Versailles is a far cry from modern bell-and-spigot cast iron pipe. Likewise, modern, strain-free, plasticized sulfur compound joints are a vast improvement over older type jointing materials.

Since construction of a pipeline system depends upon workmanship, local conditions, quality and composition of the materials used, occasional trouble cannot be avoided. Nevertheless, the frequency of such difficulties can be reduced through use of material standards established by ASTM and AWWA, plus data published as a result of research programs fostered by the latter organization.

Some time ago, AWWA requested that research be conducted to develop information on joint disintegration, corrosion and the breaking of bells in pipeline systems jointed with sulfur compounds. Results have been published (AWWA JOURNAL, December 1951).

Corrosion studies of any kind are characteristically difficult, but considerable progress has been made in this phase of research with sulfur jointing compounds. The cause of disintegration has been determined, and this difficulty can be eliminated. Chemical and physical properties of sulfur compounds have been investigated and tentative standards for these materials have been proposed by ASTM.

In a more practical approach, R. A. Jackson has discussed the importance of the proper annealing of cast iron pipe and sealing tests on sulfur compound joints (JOURNAL, AWWA, May 1952). Specific directions for installation of sulfur compound joints also have been published.

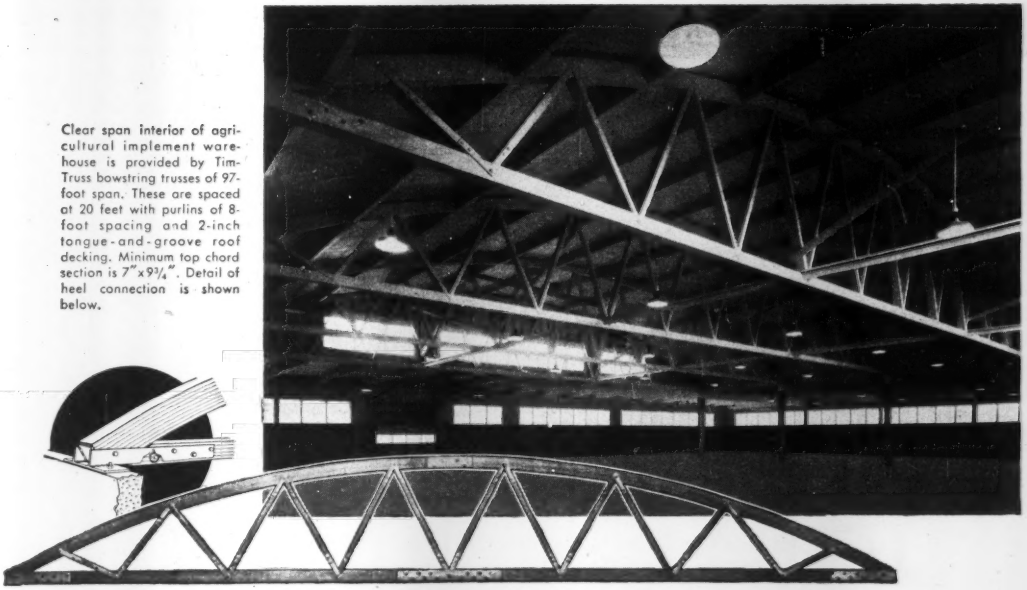
Based on SR-4 strain gage tests on ring sections from commercial cast iron pipe joined with a plasticized sulfur compound immersed in water for a period of sixteen months, it has been concluded that such systems are essentially strain-free. Spectrographic tests on plasticized sulfur joints after fifteen years of service have shown that with the exception of the interfacial zone between the iron and the jointing material, the joint is iron-free. This analysis discredits the theory that has been advanced suggesting that iron displaces sulfur in a major portion of a properly compounded sulfur joint and thus destroys its ductility. Extensive laboratory tests have also shown that plasticized sulfur joints retain their ductility over long periods of time.

Research continues toward solutions for the many difficulties in cast iron water system construction. If research results have not been universally accepted it is possibly due to complicated experimental procedures outlined in the research reports. Since the simple tests described herein can be performed by any waterworks engineer, there is every reason to expect increased confidence in sulfur compound joints.

New engineering building to be built at Syracuse

Syracuse University, Syracuse, N. Y., will erect a new $2-million College of Engineering building near the east end of the main campus, as the first step in a long-range $15-million building and development program. It will be a 5-story structure containing from 120,000 to 140,000 sq ft of floor space. For several years the engineering school has been located on a 110-acre site on Thompson Road several miles away from the main campus. The Thompson Road property has been sold to the Carrier Corporation for $3.6 million.

Clear span interior of agricultural implement warehouse is provided by Tim-Truss bowstring trusses of 97-foot span. These are spaced at 20 feet with purlins of 8-foot spacing and 2-inch tongue-and-groove roof decking. Minimum top chord section is 7"x9¾". Detail of heel connection is shown below.



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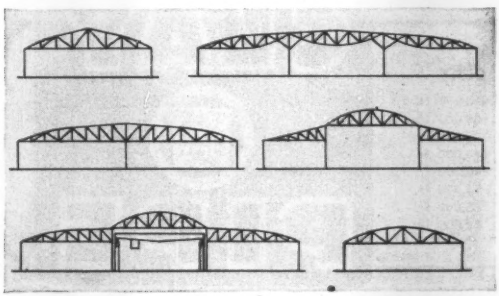

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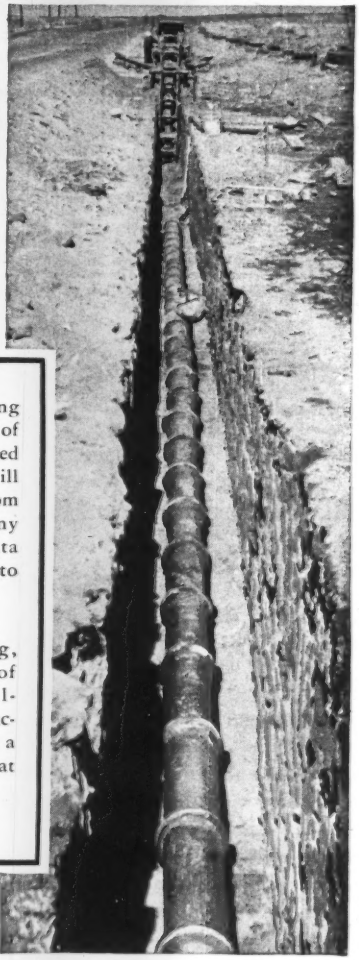

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Tucson, Ariz. (Air Force Base)	440,000 ft.
Rapid City, S. D. (Air Force Base)	54,000 ft.
Limestone, Maine (Air Force Base)	65,000 ft.
Orlando, Fla. (Air Force Base)	74,000 ft.

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C-1052-2

CONCRETE FRAMING for the new Medical and Dental School in Buffalo includes flat plate (center) and rigid frames in the brick-enclosing wing (left). Roof of amphitheater (foreground) will be supported on open-web steel joists.

Teamwork beats tight budget on complex school design

James N. De Serio
Consulting Engineer
Buffalo, N. Y.

EVEN IF the University of Buffalo had ample funds to spend on its new Medical and Dental School, design would have been difficult. But, faced with a stringent budget, the school's architect and consulting engineer had to cooperate closely and utilize all their professional lore to integrate the needed facilities under one roof without exceeding the funds available.

A medical and dental school building must have all the elements of a school, a hospital, a research laboratory and an office building. Normally, each of these has peculiar characteristics of its own. Yet, all these characteristics had to be coordinated and tied into one unit.

To begin with, the architect eliminated frills, and set dimensions, where possible, to simplify construction. The engineer, choosing floor framing in accordance with required spans, found it economical to employ a wide variety of systems, including a novel type of rigid-frame construction.

The school, which is now under construction, will be attended by 80 medical students and 100 dental students. It will cost $4.5 million and will provide 200,000 sq ft of floor area. In plan, it is H-shape, with two wings 109x244 ft—one for the medical department, the other for the dental department. The connecting section, with administration facilities, separated from the two wings by expansion joints, is 80x235 ft. Height varies from two to five stories.

• **Design requirements**—Planning the school was complicated by the widely varying size and shape of required facilities. There are numerous laboratories, large clinics, two one-story high amphitheaters, lecture rooms, a 120,000-book library, a 103-ft long student lounge, air-conditioned housing for test animals and a crematory.

The crematory requires a masonry chimney that extends 40 ft above the roof and is carried on the third floor. Because of the heavy load and large wind moments, the chimney posed a difficult structural problem.

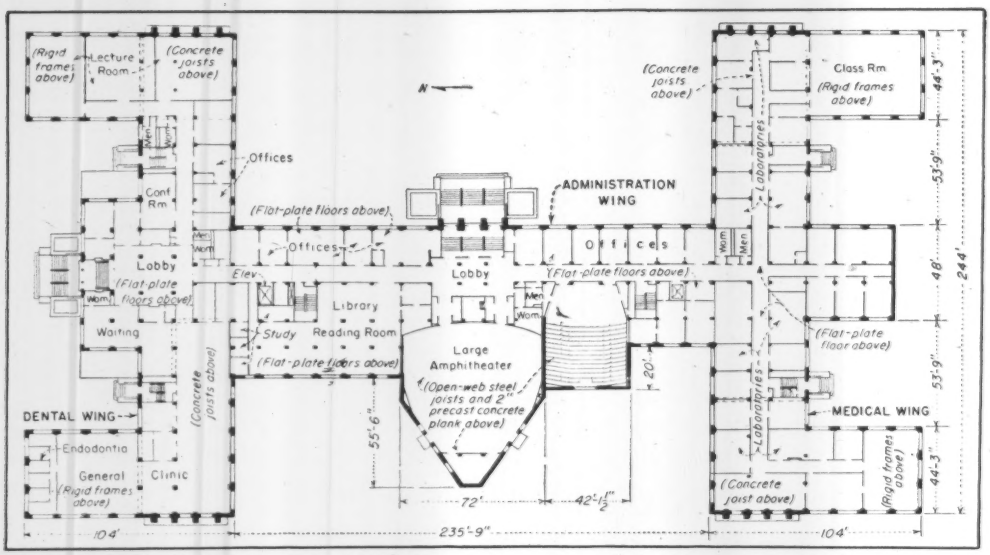
The two amphitheaters seat 250 and 460 persons, respectively. They are equipped with television screens and projectors to allow the students to view unusual surgical operations as they are actually being performed in the larger hospitals. The bigger amphitheater has a stepped floor to give all observers a clear view of the screen and a demonstration table in front of it.

The animal quarters occupy most of the top floor of the administration section, with a large dog run on the adjoining roof. On the same floor is the virology department with its own animal rooms and laboratory facilities. Because of the dangers of infection, the air from these rooms is decontaminated by passing germicidal lamps in the ducts before being expelled to the outside.

To each small laboratory, and to each table in large laboratories, outlets are run for hot, cold and distilled water, gas, compressed air, vacuum, 115-v ac, 208-v ac and 115-v dc. Also, a fume hood at the end of each table is connected to a central duct system, which exhausts to the outside air above the roof.

All rooms are heated with wall-hung convectors. Steam is supplied by the university's central heating plant and is brought to the building through a 6-ft square tunnel. Set at grade, the top of this tunnel also serves as a sidewalk.

Other important requirements of the design are that provision be made for shifting office partitions as needs change and that the structure be fireproof. To meet these varied requirement and still stay within the tight budget, the designers had to eliminate all frills. They decided that a reinforced concrete frame with smooth unplastered ceilings would be the most economical. But to meet various functional requirements, they varied the structural floor system throughout the building.



FIRST-FLOOR PLAN indicates the wide variety of facilities incorporated in the school. Dental wing is at left, medical at right. Library and amphitheaters are in the center section. Heights vary from two to five stories.

• **Exterior treatment**—Outer walls are faced with brick and limestone trim. Backup is expanded-slag concrete block and expanded-slag concrete furring tile. Windows are double-hung aluminum.

The lightweight blocks also are used for corridor partitions and other permanent dividing walls, all of which are to be left unpainted. Temporary and movable office partitions are made of light-gage steel.

Extending completely around the perimeter of structure at each floor level are 12x26 ½-in. spandrel beams. The same size is maintained throughout to get the maximum number of uses of beam forms. Architectural requirements determined the dimensions, with the result that these beams are larger than required by the loads.

Columns in the exterior walls and in the corridors are spaced 14 ft on centers. But in the first floor of the connecting section it was necessary to omit two columns because they would have formed an obstruction in the small amphitheater. These columns would have carried the exterior wall above. Hence, the spandrels in the second, third and fourth floors there had to span 42 ft.

To maintain the dimensions of the standard spandrel, the bottom of these beams was held at the spandrel line, and they were made the same thickness as the standard. Additional depth needed was obtained by projecting them above the floor 41½ in. The resulting beams are 12 in. wide by 68 in. deep.

• **Floor framing varies**—Flat-plate floors are used throughout the building, except over areas requiring long spans, such as lecture rooms, large laboratories and clinics. The shallow construction saves headroom and decreases vertical piping and duct runs.

Slabs are 7 in. thick. They are topped with 1½ in. of mortar and finished with asphalt tile. These floors generally are supported on 16-in. square columns spaced 14 ft on centers. The columns extend the full height of the structure without change in size, permitting multiple use of forms. They were designed to resist bending moments induced by the slab.

To span the lecture rooms, which are 26 to 28 ft wide, the designers called for concrete joist construction. Joists, spaced 25½ in. center to center, are 5½ in. wide and 14½ in. deep. They were formed with removable metal pans. The slab is 2½ in. thick.

For the amphitheater spans, which range in length up to 70 ft, the designers selected open-web steel joists. Spaced 5 to 6 ft apart, these beams carry 2-in. thick precast concrete planks and 1½-in. thick insulation for the roof. The underside of the steel is covered with acoustical tile.

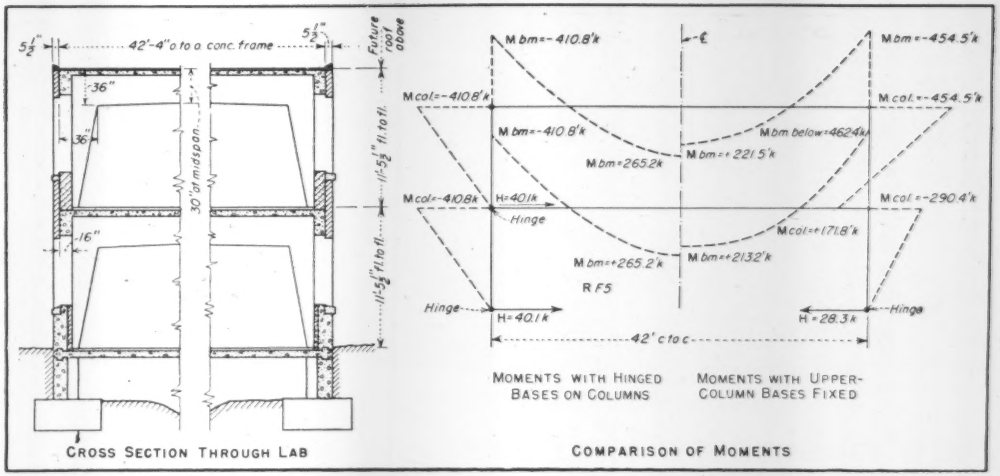
• **Two-story rigid frames**—The most intricate part of the structural framing is that required for the large laboratories, which are 56 to 70 ft long, 42 to 46 ft wide. No columns are permitted in these rooms, because they might interfere with table layouts. The laboratories are bounded by exterior walls on three sides, preventing the designers from utilizing continuity to reduce end moments in the columns.

For an ordinary one-story high structure, these conditions would have dictated the use of rigid frames. However, the large laboratories are one above the other in a two-story section of the building, where provision also had to be made for a third story. Computations showed that if the floor beams were built rigidly into the columns, the resulting bending moments would make the columns excessive in size, interfering with lab layout.

Consequently, the engineers investigated the moments in a two-story rigid frame with hinges at the bases of all columns. The horizontal thrusts for this structure are carried by the tie bars embedded in the floors. These studies indicated that hinged frames would be satisfactory.

However, the engineers noted that deflection of the lower frame would rotate the column ends, increasing the negative moment in the frame above. To overcome this, they specified that before forms are set for the upper frame, shoring must be removed from the lower frame to allow it to take its initial dead-load deflection. Then, the contractor was to replace the shores before starting the upper frame.

The rigid frames are placed so as to span the 42 and 46-ft room widths. The 42-ft frames are 16 in. wide, 30 in. deep at the center and 36 in. deep at the columns; the 46-ft frames are



RIGID FRAMES two stories high span the large laboratories. Every column is hinged at its base. As shown in the moment diagram (right), the hinges reduce column moments, thus permitting smaller members that won't interfere with room layout.

18 in. wide but have the same depths.

At the hinges, column reinforcing is welded to dowels that cross each other on the column center line to form an X. The tie bars that carry the horizontal thrust are laced between the dowels at the hinge points.

Computations indicated that no other treatment would be necessary at these points. Frame behavior after construction confirmed these figures.

• **Deflections measured** – Conditions imposed by the structural design, together with the architectural requirement that the ceilings are not to be plastered, made it necessary that the beams be cambered. The engineers tried several methods for calculating deflections; no two gave close results. Indications were that the deflection would be between 0.19 and 0.39 in. So the engineers specified a camber of ¼ in. for the 42-ft frames and ⅜ in. for the 46-ft frames.

Before and after the shoring was removed from the frames, deflections were measured with a level. These measurements indicated an average deflection of 0.136 in. for eighteen 42-ft frames, with only five readings exceeding the ¼-in. camber. For ten 46-ft frames, the average was 0.401 in., only four readings exceeding ⅜-in.

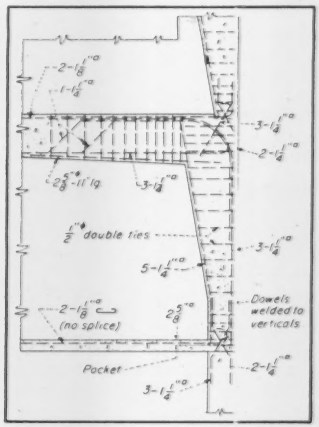
While the measured deflections are reasonably close to the calculated ones, the discrepancy in these values points to a weakness in design theory for computing deflections of beams and frames made of non-homogeneous materials.

• **Good concrete obtained**–Concrete for the structural framing is required to be laboratory controlled and tested. Specifications call for 3,000 psi in 28 days and a slump of 4 to 5 in.

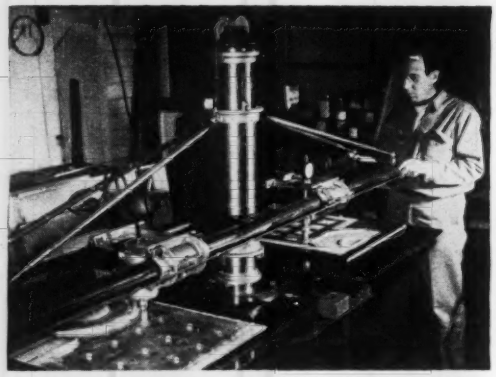
To assure a workable mix without honeycombing, the contractor chose one with a 4-in. slump, each cubic yard consisting of 547 lb of cement, 1,570 lb of sand, 1,470 lb of slag, and 37 gal of water.

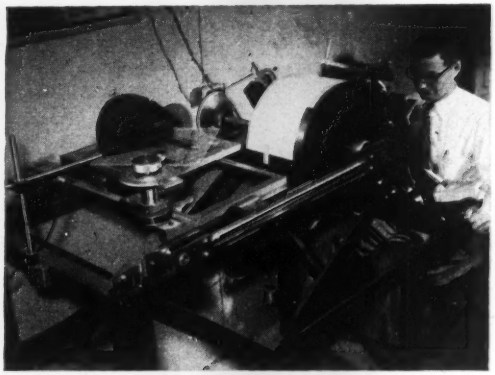
James and Meadows are the architects for the Medical and Dental School, and James N. De Serio, the consulting engineer. John W. Cowper Co. is the general contractor.

CEILINGS in laboratories are left unplastered; so the rigid frames were cambered. Measured deflections generally were less than the camber used.



AT COLUMN HINGE, dowels form an X. Tie rods in floor take frame thrust.





PLASTIC MODEL (left) of a concrete floor slab is loaded and photographed, to obtain curvature data (right) and moments.

New business: Slab analysis by photograph

WHAT STARTED OUT originally as merely an ingeniously derived solution of the specific problem of designing a floor slab for a housing project is developing into a profitable consulting engineering practice.

When Bowen, Rule & Bowen, Los Angeles engineers, were called on to design the flat slabs for Metropolitan Life's Parklabrea project in Los Angeles, they found it impracticable to compute the stresses with a reasonable degree of accuracy. An approximate mathematical analysis, they believed, might call for excessive steel or concrete, or might possibly be on the unsafe side. So they decided to determine the stresses from a model (ENR July 7, 1949, p. 70). This model analysis worked so well that the originators formed a corporation—Presan Corporation—to make it available for general use.

• **How slabs are analyzed**—First step in the analysis is to make a reflective model of the slab. From an accurately made built-up master model, Presan technicians form an exact reproduction in Lucite, with a duplicating cutting machine developed by the company. This insures that the entire floor slab is homogeneous. The polished slab surface is then mirrorized. Next, the model is assembled and placed in a testing frame facing a specially lighted nylon filament grid. Suction lines are connected to the model to simulate building loads. When the model is subjected to load, the mirrored surface deflects. This, in turn, causes the reflected grid of lines to appear distorted when photographed.

A data reduction machine transfers these photographed distortions to graphs of surface curvature. Corrections are made for imperfections in the model surface and thickness. The corrected curvatures are then converted into bending moment diagrams, from which bending moment contours are plotted.

• **Model study saves money**—According to the Presan Corp., this analysis is more exact than one made by conventional computations—particularly when there is significant irregularity in slab thickness, column spacing or wall location. Its use has resulted in substantial savings. It has enabled slab thickness to be reduced, steel quantities to be cut, framing to be eliminated.

One example is the Pershing Square Garage in Los Angeles (ENR Feb. 28, p. 28). The design calls for haunching floor and roof slabs at columns, for which computation of exact stresses would have been impracticable. By making a model analysis, the Presan Corp. saved significant quantities of construction materials.

Another example is a factory, near Miami, Fla., with a flat-slab roof made of hollow concrete blocks wedged between thin reinforced concrete joints. The roof was cast at ground level and jacked into place (ENR Feb. 21, p. 30). Presan analysis, the designer claims, enabled reinforcing steel for bending to be cut by 50%. As is usual on these jobs, only bending moments were determined, although shears may be obtained from the analysis through additional computation, which usually is not justified, according to Presan.

This so-called "waffle-block" roof collapsed during a load test (ENR May 22, p. 25). Gerald Bowen, president of the model-analysis company, claims that there was no evidence of overstress of the reinforcing steel. He says the structure did not act monolithically, as was assumed in the model analysis, and failed in shear or diagonal tension (ENR Oct. 9, p. 14).

• **Accuracy checked**—To verify the accuracy of the model analysis, the developers originally compared model solutions with known exact solutions of simple structural elements. Recently, they had an opportunity to check a more complex slab designed for a warehouse.

The slab is 9 in. thick. It rests on, but is not bonded to, 13x15½-ft concrete pile caps. It is restrained, however, at the midpoint of the pile caps by columns, which are spaced 24 ft 8 in. on centers.

Because of the difficulty of an exact analysis and the owner's desire to obtain the most economical slab possible, a Presan analysis was made. This yielded moment diagrams in two perpendicular directions. But the owner requested, as a further check, that equilibrium computations be made for two elements with data from the model study. Shears, twisting moments and bending moments had to be computed. Nevertheless, a remarkably close check resulted.

• **Fee for analysis varies**—Officials of the Presan Corp. believe their fee should be paid by the owner and not by the structural engineer, since the analysis generally results in a reduction in construction costs far exceeding the amount of the fee. This is the basis on which to date they have negotiated charges for their work.

The exact amount of Presan's fee depends on the difficulty of the job. It generally varies from 1¢ to 9¢ per sq ft of floor area.

Boiler feed water tank shown encrusted with rust and mineral deposits before metallizing.

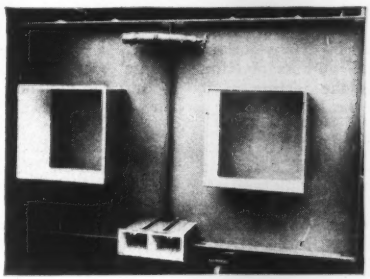
metallizing

cuts tank maintenance ...extends life

pure zinc coatings used on both fresh and salt water types

Feed water tank being metallized after preparation by grit blasting.

This 20-year old tank, used by a St. Louis brewery for boiler feed water supply, had become so badly scaled that it seemed ready for the scrap heap. Instead it was metallized with a .008" coating of pure aluminum, after being cleaned by grit blasting. Job was done between 6 P.M. one Friday night and 6 P.M. the following Sunday, during a plant shut-down. This tank is now good for another 15 years, at least. Work done by the St. Louis Metallizing Co.



Tuna clipper bait tank protected with Metco System #107 Normally necessary to scale and repaint every six months. Metallized tanks in service over four years without further maintenance.

Salt water bait tanks

The tank type shown here is used on west coast tuna clippers for salt water storage of live bait. Tank interiors are painted white to prevent the bait from killing themselves against the bulkheads. With paint alone, it is necessary to scale and repaint these tanks every six months. Tanks metallized in accordance with Metco System #107, which provides the desired white surface over .006" metallized zinc, have already been in service over 4 years without any further maintenance. (Photo courtesy Clark Metallizing Co.)

The Metco* Systems. These Systems are a series of 18 basic engineering specifications developed over 19 years of experience with pure zinc and aluminum coatings on many different types of structures and equipment. The Metco Systems provide the answer to standardization of surface preparation, metal coating thicknesses and organic after-coatings for various service conditions and appearance requirements.

Here are 10 Metco System contractors

The following organizations are set up to provide positive corrosion protection at lower annual cost in accordance with Metco System specifications. For further information, or copy of descriptive bulletin, contact the one nearest you.

* *Reg. U. S. Pat. Off.—Property of Metallizing Engineering Co., Inc.*

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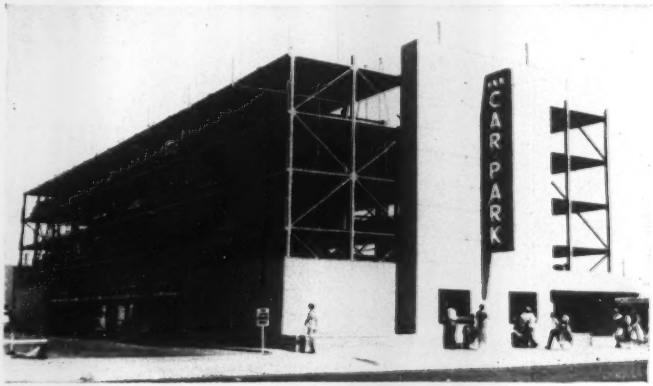


PIGEONHOLE parking garage constructed by Valley National Bank, Phoenix, Ariz. Capacity of $150,000 garage is 200 cars.

Cities fight parking snarls

Slowly and with many setbacks, cities are fighting through the problem of where to park private cars in main business districts. The solutions are as varied as the number of cities involved. Here is the picture as it developed during the last month:

• **Phoenix, Ariz.**—Like every other hustling city, Phoenix has a parking snarl that has business people worried. Suburban trading centers are taking an increasing chunk of buyer dollars.

City officials surveyed the needs—and tossed the ball back to the tradesmen. If the parking shortage is to be solved, it's the merchant's responsibility, they said.

The merchants responded fast. In two instances, private capital is providing additional parking.

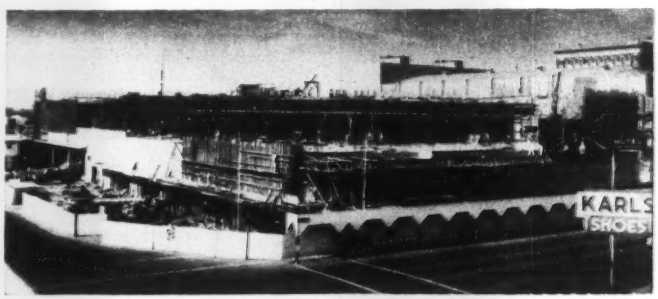
One is a 400-car capacity underground garage and ground-level department store nearing completion at a cost estimated at $3 million. The other is a 200-car capacity pigeonhole garage erected at a cost of $150,000.

And the city has installed parking meters on city-owned lots in the business district to provide about 100 more parking places.

Still parking needs exceed supply. Downtown private lots remain loaded. Major chain stores have purchased whole blocks to provide customer parking. Phoenix has a metropolitan population of 220,000, but draws from a shopping population of about 300,000.

Even with these, it still is a three-to-seven-block walk to available parking lots—a distance shoppers seem reluctant to trudge.

A businessmen's committee has



400-CAR GARAGE for Phoenix, Ariz., will have three underground parking levels and two floors above ground for a department store. Cost is estimated at $3 million.

recommended four points, any combination of which would ease parking congestion. They include:

- That the city acquire a large tract of land outside the central district for a parking lot, then operate a shuttle bus service from it to the heart of town.
- Construction of multi-floor garages above ground.
- Development of lots to serve individual stores or groups of stores.

Merchants, arguing against the city's stand that the problem is theirs to solve, claim that the city should take the lead. When downtown business falls off it leads to decentralization and sometimes to decay, they claim. When business districts decay, tax values drop and so do realty values. If a city loses taxes in such a situation it must result in higher tax rates for the rest of the city.

• **Hartford, Conn.**—City Manager Carleton F. Sharpe blames private parking lot operators of Hartford for the 18-month delay in the construction of a $2.9-million municipal parking garage. The accusation was contained in a six-page report on the garage given to the city council last month.

In 1950, local voters approved a $2.9-million bond issue to construct a municipal parking ramp. Parking lot operators, who unsuccessfully tried to convince voters that a city parking ramp would be a bad proposition, questioned the result of the vote. When this move did not succeed, the operators took the fight to the courts.

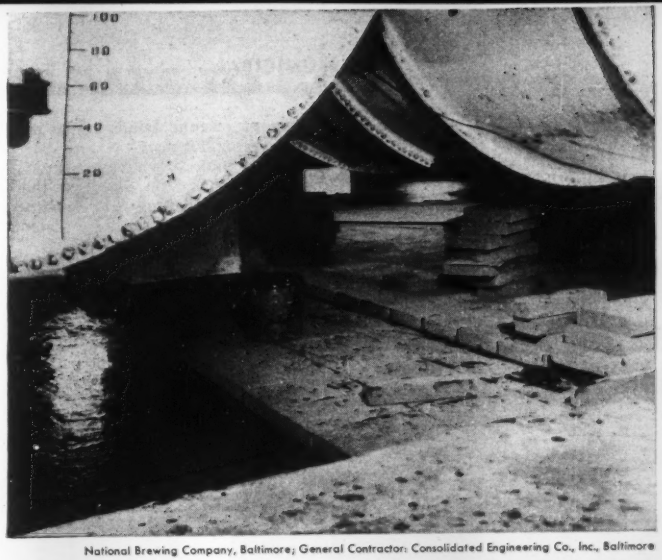
The city won its court fight with the operators as a result of a state supreme court decision on Feb. 5, of this year.

On May 26, Sharpe introduced a resolution in the city council asking authority to acquire land for the ramp site. Two weeks later, the council by unanimous vote passed Sharpe's resolution.

Sharpe reported difficulties in acquiring the land. Private owners refuse to sell at what the city considers a fair price. They want damages in addition to the price of the land.

He added that the two-year delay in construction means that the city will get less value for the construction dollar.

• **Chicago, Ill.**—Chicago's city council has enacted ordinances authorizing a program of municipally-owned parking garages and parking lot facilities, with a ceiling of $50 million on the



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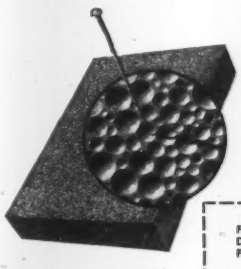

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issuance of revenue bonds to be retired from parking fees.

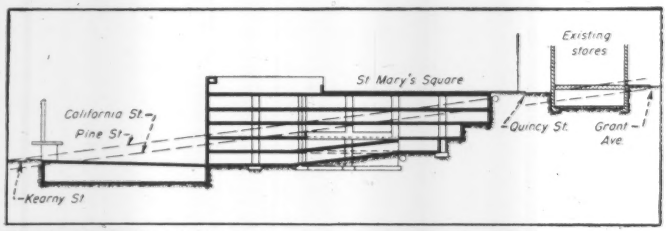
The first projects will be construction of five garages in and near the Loop, accommodating 4,000 automobiles, and the purchase of four large lots on the south side.

The garages will cost an estimated $12.8 million and the lots an estimated $2 million. Later the program will be extended to other parts of the city. The ordinance provides for the establishment of a bureau of parking in the Department of Streets and Electricity.

• **Two underground garages approved**—In Memphis, Tenn., and Cleveland, Ohio, steps were taken to get work on the underground garages started.

In Memphis a $1.2-million bond sale for funds to build a 500-car underground garage was approved. The timetable calls for bids from contractors by Dec. 15.

First steps toward construction of a 1,000-car garage under the mall in Cleveland were taken last month when the City Planning Commission approved a proposal authorizing the mayor to deliver a letter of intent to Morrison-Knudsen Co. and Ford J. Twaits Co., Los Angeles construction firms. The letter gives the go signal to the construction firms to start preliminary plans for the garage. The cost of the plans—$50,000—will be borne by the companies.



CROSS-SECTION of St. Mary's Square garage in San Francisco, Calif.

Bid approved for underground garage

The patience of San Francisco's Parking Authority paid off on Sept. 15, when the bid was taken on its long delayed project, the $2-million St. Mary's Square underground garage. The Board of Supervisors unanimously approved the bid of S. E. Onorato Inc., San Francisco, and W & B Realty Co., Los Angeles.

The joint bid proposes that the firm will lease the garage for 33 years, after which it reverts to the city. During that period, the city will receive 4% plus a minimum monthly rental of $1,225 (ENR Aug. 1, p. 123).

John J. Gould, consulting engineer, who is prime contractor on design, plans a five-story reinforced concrete building, probably faced with brick, with entrances on three sides. It will accommodate from 828 to 848 automobiles in stalls and 79 more in magazine areas. Most of the stalls will be 8 x 18 ft. It will provide complete service station facilities. About two feet of earth will be put back in place on top of the completed building, and the park will be restored and replanted as specified by the Recreation and Park Commission.

• **Hilly site**—Gould believes his design was the best possible for the hilly site for at least three reasons: its three multiple-lane entrances will hurry traffic off the streets; its wide rectangular columns, widely spaced, will allow more parking space; and the excavating and shoring problem will be minimized.

The plan provides ingress and egress from three streets, California, Pine and Kearney. Both California and Pine street have a 15% grade, so traffic will flow in and out of those entrances at the fourth floor level of the garage structure; it will flow in and out at the street level on Kearney street. Ramps will be required to serve not more than one floor above or one floor below these three street levels for 90% of all cars. Only exception will be the sixth floor roof parking area, which will be utilized for overflow.

Reversible escalators and an elevator will speed car owners to the street and to their vehicles.

The garage is planned for a minimum number of attendants.

• **Design**—The street level approaches, ramp arrangement, elevator and escalator, combined with a column spac-

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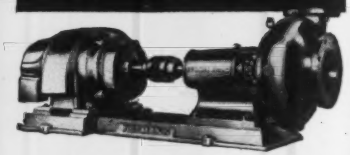

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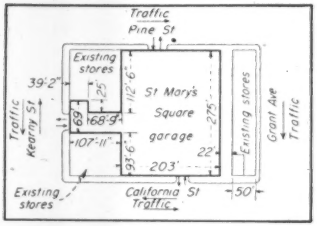

PLAN of St. Mary's Square garage.

ing of 30 ft 8 in by 33 ft 6 in will facilitate any future rearrangement of stalls for self parking. Columns and wide shallow girders were found to be cheaper than flat slab design for column spacing.

By saving space inside the garage, it can be made shorter from Kearney Street on the east to Quincy Street on the west. Not only will this eliminate a deep cut adjacent to the properties located to the west, but it will preserve a line of trees growing along that line. The grade, which will allow the west end of the garage to be stepped down, makes excavation easier and requires less shoring.

Walls surrounding the ramps are designed as major buttresses. The whole layout contains construction features designed to resist unusually large earth thrusts such as were encountered in the Broadway tunnel excavation. In case of an earthquake, they would counter-balance the effect of lateral force, exercised upon the garage structure, from the adjoining sloping hill area.

Working drawings are now being prepared for approval by city authorities. Construction is expected to start in February, with completion in early 1954.

Consulting architect is Rudolph Igaz; mechanical engineer is G. M. Simonson. Construction will be done by Haas and Haynie, general contractors.

Nashville slum clearance gets go-ahead signal

The Federal Housing and Home Finance Agency early this month approved the Nashville, Tenn., Capitol Hill redevelopment plan (ENR May 1, page 44). Nashville Housing Authority officials have promised an early beginning on the project.

Charles W. Hawkins, chief planner of the project for the NHA, said negotiations will begin immediately looking to acquisition of property needed in the $10.5-million 365-acre,

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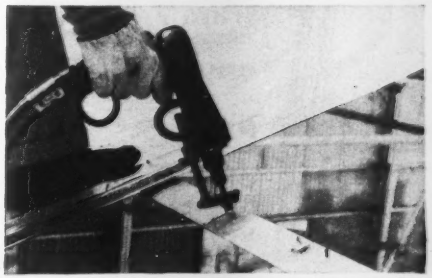

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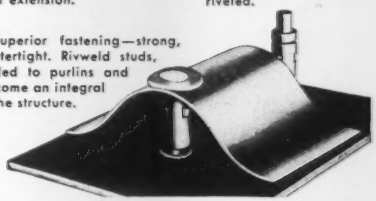

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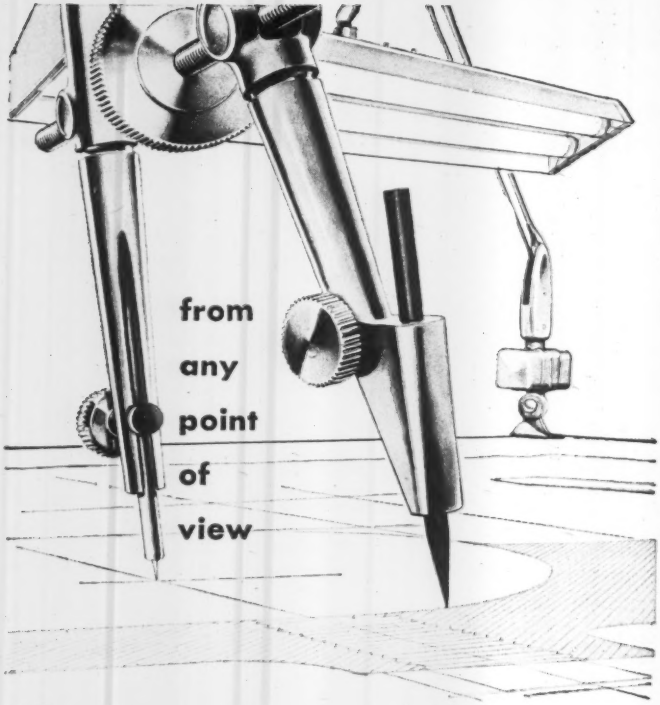

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slum clearance and urban redevelopment plan. HHFA has approved an $8-million loan and a $5-million capital grant for the work.

The redevelopment plan provides:
- Replacement of existing slums with commercial-light industry.
- Improvement of the area at the state capitol.
- Major re-arrangement of the basic street and traffic pattern and land uses near the central business district.

Hawkins said contracts for initial construction on the project probably will be let in the early months of spring. He added that the entire project should be complete in three years. This is also the time estimated for completion of the Victory Memorial Bridge, which is now under way.

The state has almost concluded an interlocking project to improve and clear the property immediately surrounding the capitol. It also is constructing two new buildings—the $2-million state archives structure and a new $7-million office building—within the heart of the project area.

Nashville became the 10th city to get funds under the slum clearance and urban redevelopment provision of the 1949 housing act. Other cities which have taken advantage of the program are: New York, Chicago, Little Rock, Ark., Detroit, Jersey City, Philadelphia, Norfolk, Va., and two Puerto Rican communities.

608-unit housing project to aid 26-block clearance

San Francisco moved a step closer to providing better housing for her ancient, over-peopled western addition last month when the federal government approved plans for a 608-unit, $8,168,000 low rent public housing project.

Plans, being worked out by the architectural firm of Spencer & Ambrose, call for one 10-story reinforced concrete apartment building and six 8-story reinforced concrete buildings.

Hall & Pregnoff have been selected as structural engineers; Nat Simonson as mechanical and electrical engineer. Construction will get under way next summer.

The government's go sign on the low-cost housing project should accelerate plans of the redevelopment agency for its proposed and contiguous 26-block western addition project (ENR July 10, p. 46). Many of the 9,600 residents in these blocks will have to be rehoused, under federal and state laws, and the agency is counting on the housing project to accommodate a large number of them.

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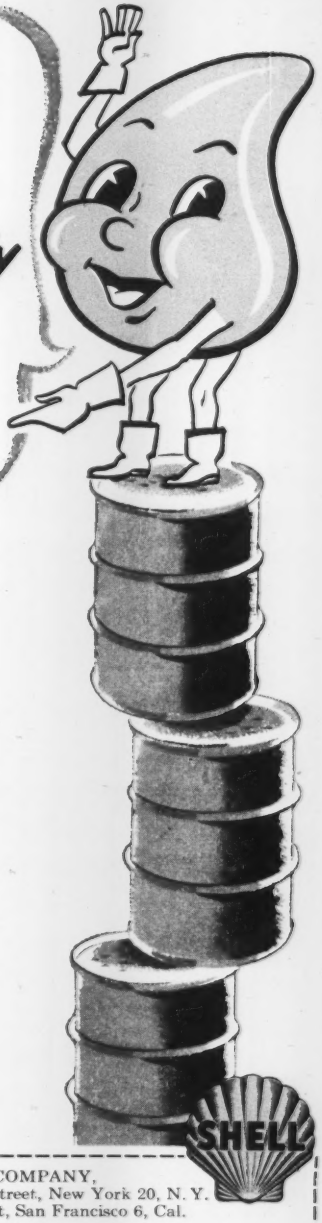

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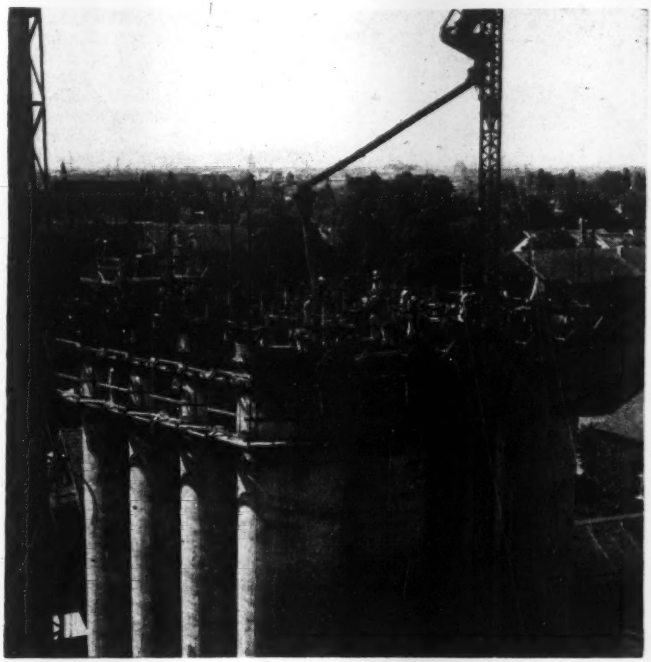


Slipforms raise Danish brewery silo

Sixteen silo cells, surmounted by a prestressed concrete water tank, are being built by slipform technique at a brewery in Hellerup, Denmark.

Total height of the structure will be 180 ft. In the silo portion, forms rose steadily at a rate of 12 ft a day, being hoisted on 88 jacking rods embedded in the concrete.

Jacks are hydraulic, receiving their pressure from a single mechanical pump.

The system, which is able to keep forms level with minimum effort by workmen, was described in ENR in its issue of Feb. 28, 1952, page 34.

An interesting feature of the Danish job is the method of reclaiming the jacking rods.

At each rod position, the form assembly carries a vertical light-gage metal tube, slightly larger than the rod. The tube rides up with the form, enclosing the rod and leaving a hole in which the rod stands. (There still is plenty of lateral support so the rod continues to carry its jack load effectively.) When the job is topped out, the rod is jacked up and removed in 13 ft screw-on sections.

Altogether, the Hellerup silos required 11,500 ft of jacking rods. Fifteen circular cells, as well as eight star-shaped spaces among cells, will be used for malt storage. The sixteenth cell is an elevator and stair well.

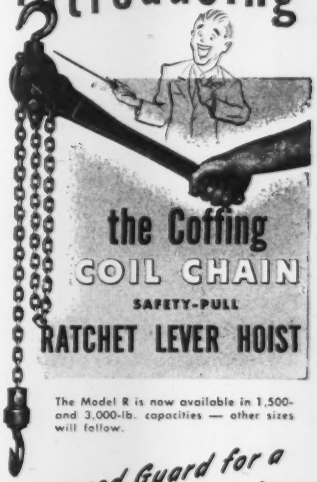
A 375,000 gallon tank, in the structure's top 48 ft, now is being built as a double-walled structure by slipform technique. The inner wall is being prestressed by the Freyssinet system. Holes for prestress steel are formed by inflatable rubber tubes, which are removed after deflation.

Silos and water tank are part of a $5-million modernization of Tuborg Breweries. Design was performed by Tuborg engineers. Contractors are Kampsax A/S, of Copenhagen, Denmark.

African road development is being pushed actively

In various regions of Africa highway projects are being advanced to improve the local economy through better transportation. Some of the

introducing



The Model R is now available in 1,500- and 3,000-lb. capacities — other sizes will follow.

Advanced Guard for a New, Advanced Line

Here is a completely new ratchet lever hoist designed to bring you added safety and convenience. The Model R incorporates the time-proved ratchet and pawl principle originated by Coffing — makes it hold positively at all times — no friction-type brake to slip or freeze — chain is free wheeling when not under load.

Many New Advantages

COIL CHAIN Swings or wraps in any direction for greater flexibility in use.

SIX OPERATING POSITIONS Handle operates in any position, works on full or partial strokes — for ease of handling in close quarters. Safety stops prevent spinning of handle.

BIG SAFETY FACTOR All hoist load-holding parts designed to withstand pull equal to several times rated capacity. Each hoist also factory tested at 100 percent overload. "Safety-valve" handle bends at point of maximum safe overload.

SIMPLE TO SERVICE The Model R may be completely disassembled with only a screwdriver for easy servicing. Not necessary to return it to the factory for repairs.

Find out more about the hoist that gives you greater convenience and safety in all lifting, pulling, stretching. Write for Bulletin EN10R

COFFING HOIST COMPANY
Danville, Illinois

Quik-Lift Electric Hoists • Hoist-Alls • Load Binders
Mighty-Midget Pullers • Spur-Geared Hoists
Differential Chain Hoists • I-Beam Trolleys

Sold by Industrial Distributors everywhere

"AND A VOICE SHALL BE HEARD!"
produced by
THE MARCH OF TIME
G-E CIVIL DEFENSE FILM AWARDED
FREEDOMS FOUNDATION PUBLIC SERVICE MEDAL

Outstanding public service release currently available for civic and industrial showings

More than 10 million people have seen General Electric's civil defense film showing how a city prepares its communications network for vital disaster service. A dramatic documentary, the 22-minute motion picture stresses the role of communications in everyday life, depicts an atomic blast over Syracuse, N. Y. and demonstrates how the existing communication systems of a city and a county can be coordinated in an emergency. The film is a part of the nation-wide Communications Advisory Service, a G-E organization of electronics engineers whose consultation services are available to communities and industries of every size.

One of the most popular films in G-E history, "Voice" is being sponsored by civic and industrial groups across the nation to stimulate public interest in civil defense. If you want it for your community at only nominal cost for mailing, call the CAS* man at the G-E office near you, or write us. *General Electric Company, Section 22102-16, Electronics Park, Syracuse, New York.*

**Communications Advisory Service*

Freedoms Foundation president Kenneth D. Wells, presents award scroll to Roy D. Jordan (center), secretary of G.E.'s Electronics Division CD Committee, and Neal F. Harmon, G.E.'s CD Coordinator.

The film shows evacuation of residents from the city by taxicab after the atom "blast" plus many other eye-opening scenes. Will your city be prepared? Be sure to see this timely civil defense film.

Lt. Gen. Willis Crittenberger, commanding First Army, with G.E. Vice-President W. R. G. Baker on nation-wide TV showing of film. More than 30 TV stations have screened the picture as a public service.

GENERAL ELECTRIC

INTERNATIONAL

highlights are the following:

• **Uganda**—The Public Works Department has a program providing for the bituminous surfacing of most of the main roads carrying heavy, fast traffic within a 25-mi radius of Kampala. Work has begun on the construction of the new Kagera Port-Kyaka Port road, and it is expected that a black top road will extend from Entebbe to the boundary of Kenya, near Busia, via Kampala, Jinja and Iganga.

• **Tanganyika**—The road between Tanga and Korogive is being reconstructed. Steps are also being taken to improve stretches on the Tanga, Pangani and Kenya border roads now almost impassable during wet weather.

• **Rhodesia** — The Lusaka-Chirundu road now under construction will extend 56 miles to link Lusaka, Northern Rhodesia, with the Beit bridge over the Zambesi at Chirundu. This new road 18 ft wide will have a bituminous surface. It is part of the main highway between Salisbury and Lusaka. Southern Rhodesia needs increased road expenditures to prevent great deterioration of its highways.

Water tower moves on ball bearings

British engineers are now engaged in moving an 80-ft water tower, intact, over a distance of 810 ft, by means of ball bearings on steel tracks.

The operation is being conducted at the National Aeronautical Research Establishment in Bedfordshire.

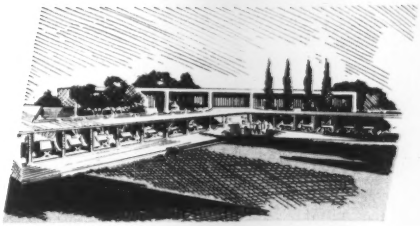
A caterpillar tractor tows the tower along a steel track through block and tackle gear. The contractors claim that the tower is the largest building in the country ever to be moved intact. Cost of the moving job is set at $42,000. A new tower would have cost nearly twice as much.

The tower weighs nearly 2,000 tons. At its original location, it interfered with plans for construction at the establishment.

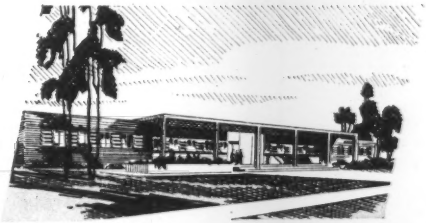
In order to be moved, the tower was separated from its foundations by small blasting charges, and a hexagonal concrete cradle was built at the base. Then a series of concrete blocks were placed on twin concrete roadways from the base of the tower to the new position. On top of these blocks, steel channels, like railway rails, were placed, and ball bearings, each 2½ in. in diameter, were inserted in the channels and the tower lowered onto them. Normal rate of progress has been 50 ft a day.

Helping build America's might...

CECO ONE SOURCE SERVICE



SUBSISTENCE BUILDING



ADMINISTRATION BUILDING

Across the nation the military bases of the Armed Forces are expanding . . . offering evidence of America's might. Aiding in this immense effort . . . Ceco Steel Products Corporation brings a one-source service to the military, speeding the all-important task . . . saving money, too. For Ceco's network of coast to coast plants means men and materials can be quickly brought to the area of need. Here are military projects currently served by Ceco: Ft. Knox, Ky. . . . concrete floor joists, steel windows and screens and reinforcing bars . . . Ft. Campbell, Ky. . . . steel-forms, reinforcing steel, steel windows and screens . . . Camp Pendleton, Calif. . . . reinforcing steel, architectural projected windows and screens . . . Ft. Eustis, Va. . . . concrete joist construction, steel windows and screens.

Here are those Ceco served in the nation-wide military expansion program.
Perera T. Luckman, Architects
M. H. Golden Construction Co.
Southeastern Construction Co.
Doyle & Russell • T. A. Loving & Co.
J. A. Jones Construction Co.
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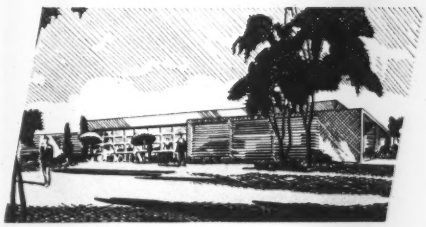
CITED BY CECO FOR

EXCELLENCE

in Design and Construction



RECREATION UNIT

BARRACKS

Chanute Field, Ill. . . . steel casements and screens . . . Corpus Christi Naval Training Station . . . steel windows, steelforms and reinforcing steel . . . Sheppard Air Force Base . . . steel windows, steelforms and reinforcing steel. Offut Air Force Base . . . reinforcing steel, steelforms, welded wire fabric and steel casements.

America's defense is speeded today because military men, the architect, engineer and contractor, found at Ceco a one-source service tailored to fit the job to be done.

CECO

In construction products

CECO ENGINEERING

makes the big difference

Ceco Steel Products Corporation • General Offices: 5601 West 26th St., Chicago 50, Illinois • Offices, warehouses and fabricating plants in principal cities

Created (not converted) as a true 4x4!

And that's why the LD gives you the proper distribution of weight and power so necessary for maximum traction, minimum strain.

Pays out on smooth highway, too! For general hauling or patrol work, the LD is a growing, economical favorite.

The LD licks a lot of snow and ice faster. Drivers like its easier, safer handling . . . its speed and maneuverability.

Here's one truck you can depend on to give you service, any time of the year. Whether it's at the start of the spring breakup, when rains keep heavier equipment in the garage, or after a winter snow-fall, you can always send an LD out on the job.

The LD is the only truck in the 14,500 g.v.w. work range that offers the full traction, safety and economy of *true, balanced* four wheel drive. Get the facts from your FWD distributor or THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wisconsin, and Kitchener, Ontario.

Built by the Makers of America's Foremost Heavy-Duty Trucks

You buy more than a truck when you buy an FWD

You get extra-traction and proper distribution of weight and power *Plus*:

- Ability to work more days per year
- Ability to handle more jobs
- Ability to travel easily and safely on or off the highway
- Ability to haul legal loads economically
- Lower maintenance costs (up to twice the front tire life, for example)
- Up to twice the truck life

World-Wide Sales and Service

Honor Severud for path-finding career

The Franklin Institute, Philadelphia, Pa., has awarded its Frank P. Brown Medal for engineering accomplishment to Fred N. Severud, of New York City. Presentation of the award took place at medal day ceremonies on Oct. 15.

The citation accompanying the medal said: "In consideration of his accomplishments in the field of building construction, whereby he has combined sound engineering principles with ingenious and novel designs to produce improvements giving simplicity, economy, usefullness and pleasing effects."

A native of Bergen, Norway (1899) Severud was educated at the Norwegian Institute of Technology at Trondheim, and was graduated with a civil engineering degree. He came to the United States as a young man and has been an American citizen for many years.

He was first employed by James B. French, consulting engineer, and later he became a partner in the firm of Ruderman and Severud. Still later he carried on an independent practice under his own name and now is senior partner in the firm of Severud-Elstad-Krueger, consulting engineers, in New York City.

Besides his engineering practice, he has served as technical advisor to the Norwegian government, consultant to the government of Puerto Rico and as consultant during the rebuilding of an oil city in Peru.

For the U.S. government he has engineered more than 20 jobs, and his practice with industrial clients includes such jobs as the Edsel B. Ford Research Laboratories in Dearborn, Mich., the Sun Science Center in Newtown Square, Pa., and the Socony Vacuum Research Laboratories at Paulsboro, N. J.

• **Solutions**—Severud's originality of thought can best be understood by examining a few of the engineering problems he has solved.

For example, he was called upon by the government when many Arctic hangars built on permafrost sank. Severud determined that the heating of the hangars slowly melted the permafrost. To remedy this, he insulated the floors and refrigerated the underside of the insulated floor by a series of pipes through which cold polar air was blown continuously. Hangars built to this design had no further difficulty with melting of the permafrost at such projects as the Thule air base (ENR Oct. 2, p. 21).

FRED N. SEVERUD, honored for sound engineering and ingenious designs by The Franklin Institute.

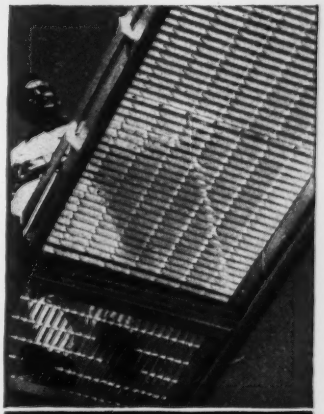
Severud was also the structural engineer for the apartment helix (not yet constructed). This apartment plan provides for pie-shaped apartments arranged in a spiral pattern around a central circular core, with each apartment half-a-story higher than its predecessor.

New construction course

Men and women engaged in the building industry, or preparing to enter the field in an administrative capacity can now earn a college degree at Columbia University while mastering the principles of building construction.

The university has established a major program in Construction Management leading to a Bachelor of Science degree.

The program calls upon the entire resources of the university. In addition to 64 points in cultural and academic courses the studies include 60 points in professional courses in architecture, engineering, business and law.



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A.O.Smith
100% SERRATED SAFETY GRATING
keeps a man on his feet
and
COSTS NO MORE
than ordinary grating

PREMIUM QUALITY AT NO PREMIUM IN PRICE!

Write for our new grating engineering handbook.

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The man who sneezed

at $104,000.00

By Mr. Friendly

"My philosophy is simple!" Said Jones, the famous treasurer,
"If a dollar saved is pleasure... a fortune saved is *pleasurer!*"
We said, we'd saved one company a *hundred grand or so!**
"A round, firm, fully-packed sum!" he cried,
"A sum to make a man glow."
"It's twice as pleasing as 50 grand, and 10 times as pleasing as 10."
Then he started sneezing to beat the band,
and did it again and again!
The moment he heard his dreadful "Ka-choo!"
he knew as a treasurer he was through;
For any treasurer will tell you *that*,
this is a sum you can't sneeze *at!*

*THE CASE OF THE DODGE CORPORATION

Company: Dodge Manufacturing Corporation of Mishawaka, Ind. "First in power transmission machinery."

Record: An American Mutual policyholder for over 30 years.

Savings through lower premiums: $75,000 in last 8 years alone.

Savings through dividends: More than $29,000.

Total Savings: More than $104,000.

Moral: If you're interested in service that can help reduce costly accidents and premiums . . . and help raise production and employee morale, write for the complete case of the Dodge Corp., American Mutual Liability Insurance Co., Dept. O-115, 142 Berkeley St., Boston 16, Mass.

AMERICAN MUTUAL AM

Service from salaried representatives in 78 offices! • Savings from regular substantial dividends!

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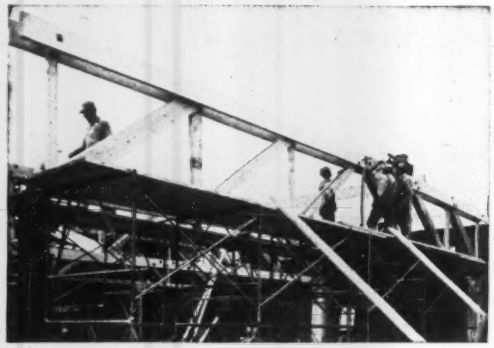
Structural Wood Framing Systems by Weyerhaeuser

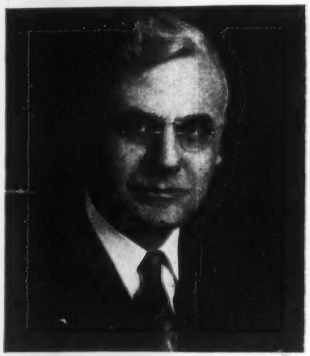


Engineering in lumber has developed a broad line of structural wood products, precision fabricated by Weyerhaeuser. A variety of types of roof trusses is offered: bowstring, flat top, tandem, and pitches, for post-free clear span buildings, 30 feet and wider . . . round top and pitched type trussed rafters . . . segmental arched rafters for 30 to 50 foot spans . . . buttressed arches for 50 to 100 foot spans . . . girders and other wood structural systems.

Fabricated from stress-graded Douglas Fir lumber, these products are delivered to the job site complete with hardware, ready for erection by local crews.

The catalog includes pertinent engineering and design data . . . Write nearest office for the catalog and other information.

WEYERHAEUSER
SALES COMPANY
FABRICATING DEPARTMENT
SAINT PAUL 1, MINNESOTA
TACOMA, WASH. NEWARK, N. J.



STANDARDIZER Tom D. Jolly, of Alcoa, believes in modular construction.

Answer to high costs is modular construction

Tom D. Jolly, vice president in charge of engineering and purchases for the Aluminum Co. of America, combines engineering with the functions of a purchasing agent.

Alcoa's huge wartime expansion gave Jolly his opportunity to show what an engineer could do for purchasing. At one time he was helping the company build 35 plants at once.

Jolly gave the following example of how standardization works:

The company found that it needed about 40 kilns 120-ft long to process alumina in several plants. Formerly, kilns of a varying design would have been built for the various plants. Jolly got the government agency involved to agree to standardize the kilns.

The kiln manufacturer agreed, to his credit, to supply the drawings to other kiln manufacturers and six or eight of them made the kilns. The kilns are completely interchangeable.

Jolly was born in Foxburg, Pa., and studied mechanical engineering at Carnegie Tech night school for three years. In 1949 he was awarded an honorary degree of Doctor of Engineering at Rensselaer Polytechnic Institute.

Jolly was made purchasing agent of Alcoa in 1931 and promoted to chief engineer and director of purchases in 1937. In 1942 he became vice president for engineering and purchases.

Jolly believes that standardization is becoming the dominant characteristic of our economy. He also believes that the greatest boon to construction now on the horizon is modular coordination. He thinks that when architects, contractors and engineers agree on a modular unit for building construction, the field will get a new lift.

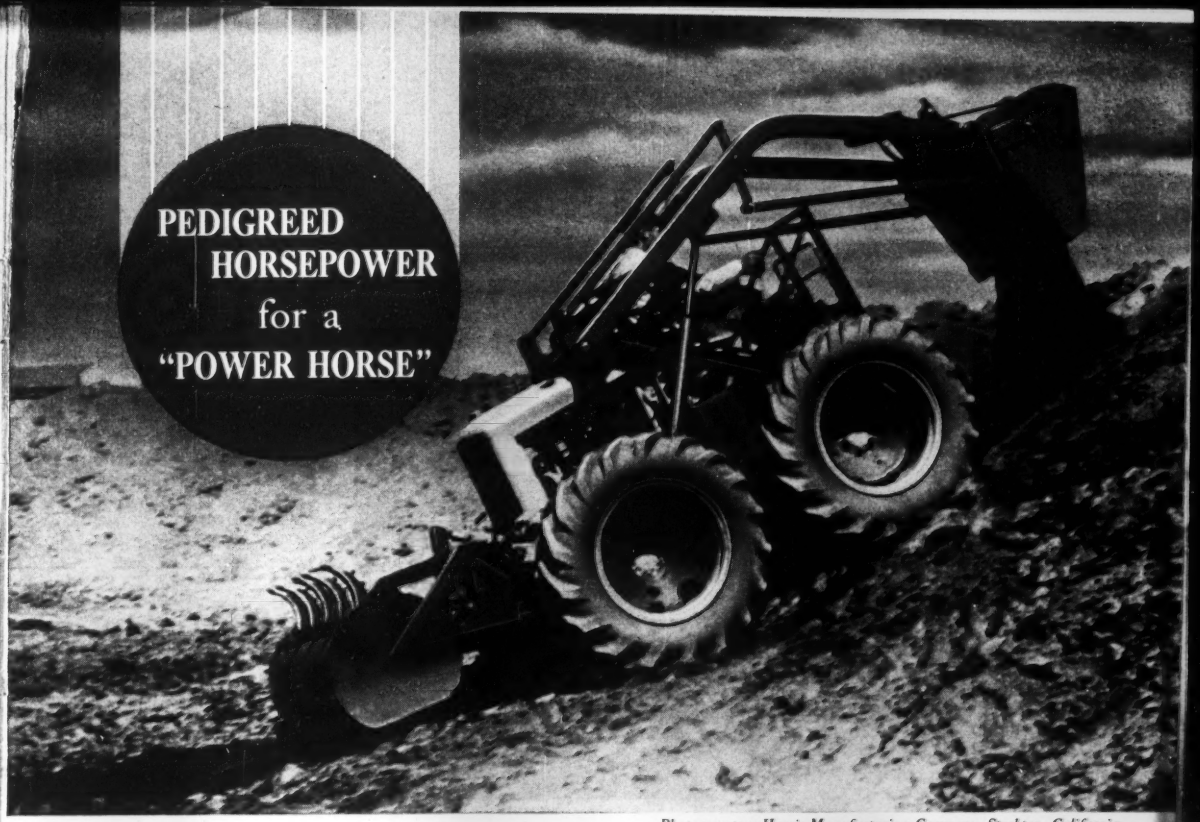
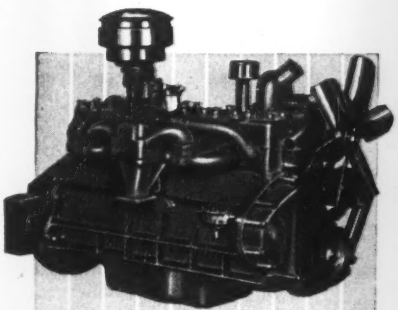


Photo courtesy Harris Manufacturing Company, Stockton, California

Want to scoop out a big reservoir in record time?



Building a reservoir means moving a great many tons of earth. Here you see a Chrysler-powered four-wheel-drive tractor doing the job. Scraping . . . scooping . . . piling up ton after ton of earth . . . forward and reverse . . . high speed and low speed . . . hour after hour, day after day.

It is equipped with level-lift three-quarter yard bucket, suspension hitch and a seven-foot chisel scraper. A real test for an engine with 230 cu. in. displacement! Yet the Chrysler Industrial Model 6-A supplies unwavering power. One more example of the outstanding, sometimes almost unbelievable performance of Chrysler Industrial Engines.

Mammoth engine building facilities and Chrysler engineering provide everything you need to better meet widely varied requirements. For example, an engine can be built with standard, fungus-treated or corrosion-resistant electrical system . . . propane or natural gas burning carburetor . . . standard or special dust-resistant air cleaner . . . three, four or five speed transmission . . . standard or gyrol fluid drive.

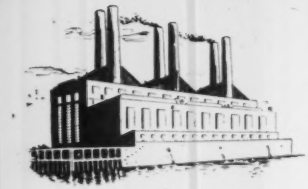
Yet Chrysler Industrial Power is not expensive. Production-line methods, adapted to specialized industrial engine building, provide custom-built industrial engines at mass-production prices.

A Chrysler Industrial Engine Dealer will be glad to recommend one of the nine basic Chrysler Engines for your job. If your problem is special, write: ***Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

CHRYSLER

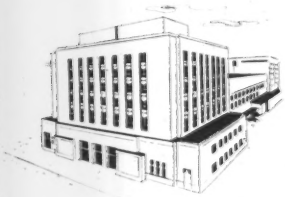
Industrial Engines

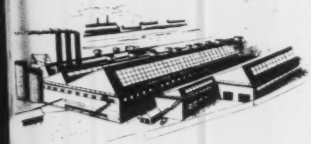
HORSEPOWER WITH A PEDIGREE



STRUCTURAL STEEL...

For hundreds of America's Industrial bridges and buildings has been engineered, fabricated, and erected by Fort Pitt Bridge for over 56 years...





Fort Pitt BRIDGE WORKS

Member American Institute of Steel Construction

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"Steel Permits Streamlining Construction with Safety, Endurance and Economy"

Careers . . .

• **Appointed**—G. J. Goudreau & Co., Cleveland builders, announce that **Bert R. Taylor, Jr.,** has been named assistant to the president and **Frank W. Kabbes** has been promoted to chief engineer . . . **Col. Chester K. Harding,** present division engineer for the South Atlantic Division, Atlanta, Ga., is being transferred to an overseas assignment. He is being succeeded by **Col. Walter K. Wilson, Jr.,** present district engineer at Mobile, Ala. . . . Engineer of bridges for the Baltimore and Ohio Railroad since 1940, **Charles E. Sloan,** was this week appointed engineer of bridges and buildings for the railroad. **Robert N. Cook,** for 17 years connected with construction activities of the federal government, is now general manager of Rader Engineering Company's new Washington office.

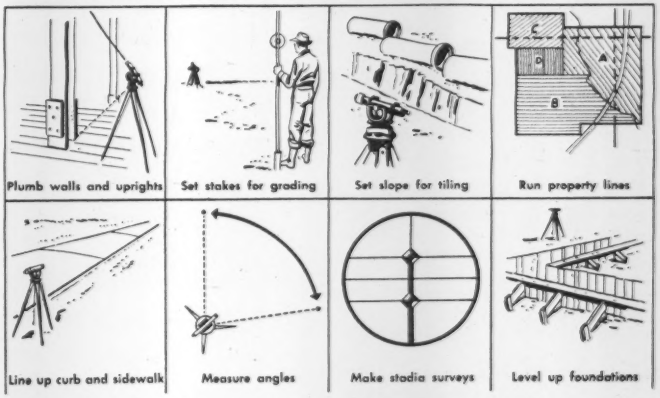
• **Elected**—**Wilson E. Campbell,** of Dagsboro, Del., was elected chairman of the Delaware Water Pollution Commission. He succeeds **Lyman Cox,** who resigned last July . . . Elected president of the newly formed Connecticut Building Congress was **Victor A. Frid,** of the Hartford firm of Ebbets, Frid and Prentice . . . **L. F. Grant,** field secretary of the Engineering Institute of Canada, was elected chairman of the Engineers Council for Professional Development at its annual meeting. Vice chairman is H. T. Heald, chancellor of New York University.

• **Honored**—**Merle Geoffrion,** an undergraduate in the civil engineering department of the University of Delaware, received the $564—second award made by the fifth annual Engineering Undergraduate Award and Scholarship Design program of the James F. Lincoln Arch Welding Foundation of Cleveland, Ohio. The award was made for his design of a highway bridge. The department received, in his honor, a scholarship fund of $500.

• **Retired**—**Charles A. Daymude,** chief structural engineer of the Department of Buildings and Safety Engineering, Detroit, Mich., retired last month after 35 years of service . . . **W. H. Holmes** resigned early this month as principal engineer, design and construction of dams, for the California Division of Water Resources in Sacramento, to enter private engineering practice in Sacramento . . . **Allan L. Burdick,** district engineer for the Hawaii Department of Public Works on the islands of Molokai and Maui, retired early this month. **E. K. Morrison** of Davenport, Ia., succeeded him.

White Universal Level-Transit...
most versatile instrument you can own!

INDISPENSABLE FOR THESE JOBS — AND MANY MORE



ENGINEERS agree: you can do more jobs better — at lower cost — with the White "Universal" Level-Transit. The improved Model 3000 has internal focusing, coated optics, a guarded vertical arc. Plus all the other quality features needed to give you lifetime durability and accuracy. The price: *only* $185*, complete with tripod. See your dealer, or write DAVID WHITE COMPANY, 315 W. Court St., Milwaukee 12, Wis.

*Price subject to change without notice.

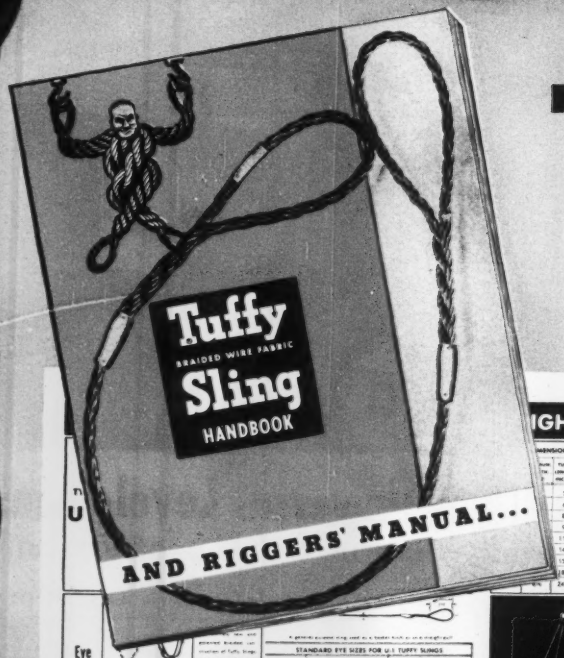
DAVID WHITE COMPANY

We offer the most expert **REPAIR SERVICE** *on all makes, all types of instruments.*

7274

Just Off to Help

Free!



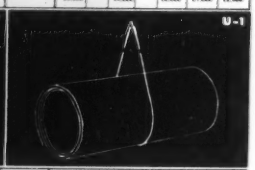
IGHTS AND SAFE LOADS...

DIMENSIONS		WEIGHT IN POUNDS		FITTING SIZES	SAFE LOADS IN POUNDS				
RUN TH	TUCK LENGTH INCHES	6 FOOT LENGTH	EACH ADDITIONAL FOOT	NONE	STRAIGHT PULL	BASKET HITCH			
5	0.8	2.08			650	1,300	1,100	900	650
6½	1.0	1.8			1,100	2,200	1,900	1,600	1,100
8	3.0	3.0		SEE	2,600	5,200	4,500	3,600	2,600
9½	4.8	4.5		U-1-T TABLE	4,000	8,000	6,900	5,600	4,000
11½	7.4	7.0		BELOW	6,000	12,000	10,500	8,500	6,000
14	10.0	9.0			7,800	15,600	13,500	11,000	7,800
15	13.2	12			10,000	20,000	17,300	14,100	10,000
18	21.6	18			15,000	30,000	26,000	21,000	15,000
24	33.0	27			22,000	44,000	38,000	31,000	22,000

U

Eye Splices

STANDARD EYE SIZES FOR U-1 TUFFY SLINGS		
½"	Tuffy Sling	4" eye
⅝"	Tuffy Sling	4" eye
¾"	Tuffy Sling	6" eye
⅞"	Tuffy Sling	9" eye
1"	Tuffy Sling	9" eye
1⅛"	Tuffy Sling	12" eye
1¼"	Tuffy Sling	12" eye
1⅜"	Tuffy Sling	15" eye
1½"	Tuffy Sling	18" eye



TYPE U-1-T

U-1T DIMENSIONS			WEIGHT IN POUNDS		FITTING SIZES	SAFE LOADS IN POUNDS				
DIAM. IN INCHES	REMINDER LENGTH FEET	TUCK LENGTH INCHES	6 SLING FITTINGS	EACH ADD. TIONAL FOOT	SLIP THRU THIMBLES TYPE 3902 R Carlin No.	STRAIGHT PULL	BASKET HITCH			
½	3	8	6	0.30	U1W 3	2,600	5,200	4,500	3,600	2,600
⅝	4	9½	9	0.45	U1W 4	4,000	8,000	6,900	5,600	4,000
¾	4	11½	12	0.70	U1W 4	6,000	12,000	10,500	8,500	6,000
⅞	5½	14	17	0.92	U1W 5	7,800	15,600	13,500	11,000	7,800
1	6	15	20	1.2	U1W 5	10,000	20,000	17,300	14,100	10,000
1¼	7	18	34	1.8	U1W 6	15,000	30,000	26,000	21,000	15,000
1½	8½	24	51	2.7	U1W 7	22,000	44,000	38,000	31,000	22,000

UNION WIRE ROPE CORP

union Wire Rope

the Press and Ready You Cut Sling Costs!

Only Handbook of its Kind in the Sling Field. You just can't measure Tuffy Slings by the old sling standards. Because of the new characteristics and efficiencies developed in Tuffy's 9 part, machine braided wire fabric construction, all users of slings need this Sling Handbook to know the facts about lower sling costs through longer sling service. You can have it FREE for the asking. It gives you—

Factual Data On 12 Sling Types and On Various Types of Sling Fittings. That's right, all the working data—dimensions, weights, safe loads, standard eye sizes, tuck lengths, sizes and data on standard and special fittings, straight pull, basket, choker and angle hitches, simplified ordering procedure, etc., on 12 factory fitted and factory packaged sling types. Also there is valuable information on sling care and on braided wire fabric for rigging your own slings.

30 Illustrations of Sling Uses—help you determine the types to fit your sling jobs. Should none of the 12 factory fitted types exactly fit, then the handbook tells how our engineers develop special types for special uses.

Step by Step, Illustrated Instructions On Splicing Both Tuffy Slings and Wire Rope. Splicing the braided wire fabric of Tuffy Slings is made easy with visual instructions. And, to make the sling handbook doubly useful, it contains 24 pages of visual instructions on making 7 kinds of wire rope splices, attaching sockets, ferrules and thimble clamp. Efficiencies of wire rope attachments, as established by actual strength tests, are tabulated.

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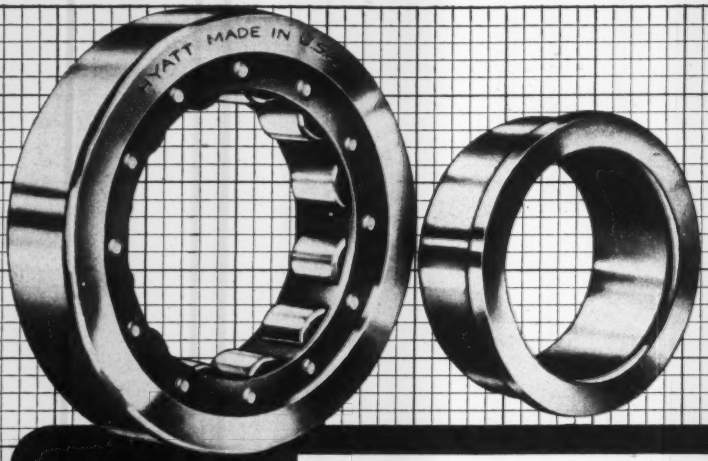
*Name*_____

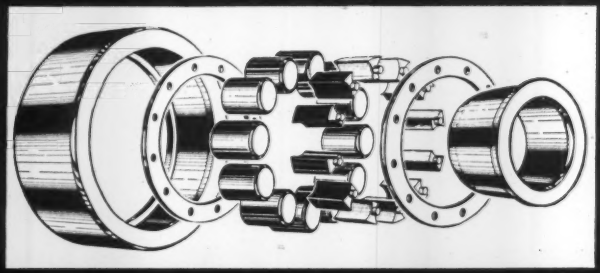
*Title*_____ *Company*_____

*Address*_____

*City*_____ *State*_____



Locating.
High Capacity
Bearings...



HYATT HY-LOADS

THE R-WB type of Hyatt Hy-Load is a two-part roller bearing with a single flanged, separable inner race. Rollers are retained by a conforming bar cage and flanges at both ends of the outer race.

Painstaking attention to all construction details such as flange squareness on races, uniformity of roller diameters, lengths and end squareness, plus high surface finishes, results in quieter-operating, longer-lasting bearings. The construction of this bearing provides heavy load-carrying capacity; smooth, quiet performance and permits high-speed operation.

Flanged races on these bearings provide for endwise shaft location and accommodate light or intermittent thrust in one direction. When used in pairs they can locate shafts or carry light thrust in either direction.

* * *

Proper bearing application can improve the equipment you are designing or building. Be sure of your bearings. Consult your Hyatt Catalog or write for further information. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

OBITUARIES

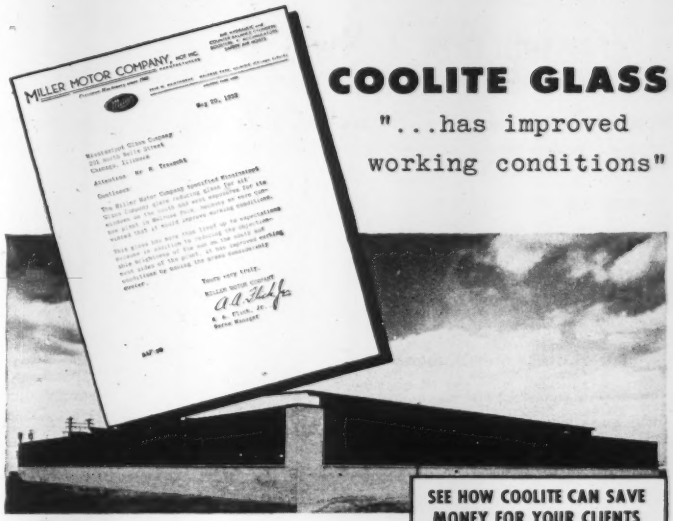
Otto D. Rohlfs, former city engineer and water superintendent at Seattle, Wash., died there Sept. 24. He received his civil engineering degree from Columbia University, worked for mining companies and the Milwaukee Road before becoming Seattle city engineer in 1932. He was with the War Production Board during World War II.

Clinton Yingling, Jr., 55, a structural engineer for the government for 30 years, died in Washington, D. C., recently. Connected with the Public Buildings service, he was one of two men to determine the extent of the structural repair necessary to renovate the White House. He was a C.E. graduate of George Washington University, and when in private employment he was responsible for the structural design of the Shoreham office building and many others in metropolitan Washington.

Stanley Albert Kerr, 64, long time engineer for the Bureau of Reclamation, died in Englewood, Calif., Sept. 17. He retired as Sacramento regional planning enigneer for the bureau on April 1, 1950, and was awarded the Interior Department's distinguished service medal. A graduate in civil engineering at the Penn State College, he started work for the bureau in 1907 and served for a total of 25 years in Montana, Idaho and Nevada. In 1925 he left the bureau to work for the J. B. Lippincott engineering firm in Los Angeles, until 1939. In 1941 he was transferred to Sacramento and supervised work on the Central Valleys Project Basin Report.

Joseph Matte, Jr., 68, structural and civil engineer, died in Detroit, Mich., Sept. 5. He was a graduate of M.I.T. and an associate of Albert Kahn Associated Architects and Engineers for 39 years. As chief structural engineer he was responsible for the structural design of many buildings including many Ford plants, Dodge, Chicago, and Willow Run, and the Fisher and General Motors buildings in Detroit, Mich.

Walter Rowland, 82, for many years in charge of civil engineering for the Nitrogen Section of the Solvay division of Allied Chemical and Dye Corp., died Sept. 25 in Petersburg, Va. From 1907 to 1916 he was with the Isthmian Canal Commission as engineer of design for the Pacific piers of the Panama Canal.



COOLITE GLASS

"...has improved working conditions"

Miller Motor Company, Melrose Park, Illinois. John S. Cromelin, Architect, Hamilton Glass Company, Glazier.

Manufacturer of Air and Hydraulic Equipment Selects COOLITE GLASS by Mississippi to Cut Raw Sun Glare and Heat

Modern management knows that workers who see better, produce better ... and this testimonial from a user of Coolite, Heat Absorbing, Glare Reducing Glass by Mississippi highlights the importance of "visioneering" in a modern plant. Coolite traps and absorbs much of the sun's heat—helps keep interiors comfortably cool. Coolite also filters out annoying glare, floods work areas with pleasantly tinted, softened, filtered light that cuts costly eye fatigue.

SEE HOW COOLITE CAN SAVE MONEY FOR YOUR CLIENTS

In your plans for new industrial buildings or the modernization of existing ones, it will pay you to find out how Coolite can provide increased efficiency and economy. The cool, blue-green color of Coolite adds a modern note to any exterior. Coolite's filtered light boosts employee morale, reduces rejects. See your nearby Mississippi Glass distributor today.

Send for free Coolite Catalog, "Coolite Heat Absorbing and Glare Reducing Glass." Samples on request.

Translucent, light diffusing, figured and wired glass by Mississippi is "visioneered" for better daylight illumination. Available in a wide variety of patterns and surface finishes, all scientifically designed to distribute light to best advantage.

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NEW YORK • CHICAGO • FULLERTON, CALIF.

WORLD'S LARGEST MANUFACTURER OF ROLLED FIGURED AND WIRED GLASS

"Gunite" ..... the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY

"GUNITE" CONTRACTORS

GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.

MANUFACTURERS OF THE "CEMENT GUN"

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Chicopee Falls** — BARRACKS — B.A. 10/17 — Purchasing & Contracting Office, Westover Air Force Base, rehabilitate airmen's barracks, IFB 19-602-53-16. CD 1/14/52.

† **Mass., Springfield**—FREIGHT ELEVATOR—B.A. On or About 10/24—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, installing freight elevator in Bldg. 103, Springfield Armory, Eng. 19-016-53-35.

† **Mass., Chicopee Falls**—ACCESS ROAD—B.A. On or About 10/31—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, access road, fenced and open storage facility, Westover Air Force Base, Eng. 19-016-53-37. CD 1/1/52.

BIDS ASKED—BUILDINGS

Mass., Scituate—SCHOOL—B.A. 10/23—Town, Supt. Schools, Cudworth Rd., high school. $825,000. Plans deposit $50. Extended date. Perry, Shaw & Hepburn, Kehoe & Dean, 31 St. James Ave., Boston, archts. CD 10/3.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
American Bridge Co., 1414 Statler Bldg., Boston, Mass. CA. **$2,597,962**, est. $2,400,000. furnish, place and paint structural steel South End Bridge, Agawam and Springfield. CD 8/22, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Berke Moore Co., Inc., 8 Newbury St., Boston, Mass. CA. **$2,744,994**, est. $2,800,000. hy., dike, underpass constr., Auto Rte. No. 5, UI 286 (7), West Springfield. CD 6/27, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Stewart & Williams, Inc., 185 Water St., Augusta, Me. CA Est. **$300,000**. FINE ARTS BLDG., LEWISTON, ME. Bates College, Lewiston, Me. Bids July 8. CD 6/24.

Sciaba Co., 86 Shawmut Ave., Boston, Mass. CA **$975,000**. High SCHOOL, addn., alterations, AUBURN, MASS. Town, School Dpt., Tuttle Square, Auburn, Mass. CD 9/30, under LB.

Wexler Constr. Co., 2 Elm St., Brookline, Mass. CA **$612,882**. Elementary SCHOOL, Fiske Dist., WELLESLEY, MASS. Town, School Bldg. Comn., Donald White, ctn., Wellesley, Mass. CD 10/3, under LB.

▲ **E & F Constr. Co.**, 94 Wells St., Bridgeport, Conn. LB. **$2,489,000**. moderate rental HOUSING South end site, BRIDGEPORT, CONN. City Housing Auth., 252 Hallett St., Bridgeport, Conn. Bids Oct. 1. CD 9/23.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **Pa., Pittsburgh**—FENCING and LIGHTING—B.A. On Or About 11/18—U. S. Eng., 121 N. Broad St., Phila., Zone 1, security fence and security lighting at Greater Pittsburgh Air Force Base, Coraopolis, Inv. No. ENG 36-109-53-127.

BIDS ASKED—BUILDINGS

N. Y., Brooklyn—HOUSING—B.A. 10/28—New York City Housing Auth., 63 Park Row, New York, Zone 38, foundations and general constr., heating and ventilating, electrical work, plumbing, furnishing and erecting elevators for Cypress Hills Houses (Proj. No. NYS-58-2) in area bounded generally by Sutter, Euclid, Blade Aves., Chestnut St., Dumont and Euclid Aves., Linden Blvd. and Fountain Ave. Plans deposit $75, $25 elevators. Extended date. CD 10/1.

Pa., Norristown—HOSPITAL—B.A. 10/29—Dpt. Property & Supplies, 319 N. Front St., Harrisburg, renovating Bldg. 6 at Norristown State Hospital. $600,000. Plans deposit $25. H. Clifford Kreisle, 20½ N. Queen St., Lancaster, archt. CD 9/19.

SOON LETS CONTRACT—BUILDINGS

N. J., Haddonfield—E. Ferrenz & Taylor, archts., 152 W. 42 St., New York, N. Y., soon let contract Home for Aged, for Presbyterian Synod of N. J., 395 Ridge St., Newark, N. J. $400,000. Edward & Hjorth, 67 W. 44 St., New York, N. Y., engrs CD 4/7.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, the Governor Alfred E. Smith State Office Bldg., Albany,
H. F. Stimm, Inc., Ellicott Square, Buffalo 3, N. Y. LB **$320,619**, est. $367,000, 0.31 mi. City of Buffalo-Fuhrmann Blvd. High Level Bridge (Cont. 1), FAC 52-13, Erie Co.;
cancelled bids to have been opened Oct. 2, 0.92 mi. New York State Thruway-Hudson Sect. Sub. 9B (Hudson River Bridge). HT. 52-3. Westchester Co., est. $13,208,000. Bids Oct. 2. CD 9/10.
Hendrickson Bros., Inc., 63 N. Central Ave., Valley Stream, N. Y., LB **$373,195**, est. $482,000, drainage facilities 15.33 mi. Southern State Parkway, SSP. 52-2, Nassau Co., NEW YORK. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Oct. 2. CD 9/10.
▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Brunner Asphalt & Const. Inc., 237 Kensington Ave., Buffalo, N. Y., LB **$844,698**, est. $850,000. 0.99 mi. (Acc. 0.67) City of Buffalo: Humboldt Parkway Extens. (Agassiz Cir.-Delaware Ave.). FAC. 52-7, Erie Co.;
Hendrickson Bros., Inc., 63 No. Central Ave., Valley Stream, N. Y. LB **$119,929**, est. $140,000. 0.3 mi. North Hempstead Turnpike, SH 9018, Valley Road Intersection with S. H. 9018 (Co. Rd.), R. C. 52-93, Nassau Co.;
The Kellam & Shaffer Co., Maxon Rd., Schenectady, N. Y. LB **$149,487**, est. $170,000. 4.14 mi. Scotia-Saratoga Co. line, Pt. 2, S. H. 1609, FARC 52-75, Schenectady Co.;
Louis Longhi & Son, Inc., Box 580, Glens Falls, N. Y. LB **$798,236**, est. $844,000, 2.13 mi. Syracuse-Lafayette, S. H. 5365, FARC, 52-8, Onondaga Co.;
The Lane Constr. Corp., 37 Colony St., Meriden, Conn. LB **$688,575**, est. $751,000. 2.88 mi. New York State Thruway-Ontario Sect.-Sub. 14 (Manchester, Rte. N. Y. 21 Interchange), Chapin-Palmyra Pt. 2, S. H. 1549, O. T. 52 13, R. C. 52-98, Ontario Co.;
received no bids Oct. 2, 4.65 mi. Harriscena-Fort Ann, Pt. 1, 2A and 2B, FAS. SH. 52-14, Warren and Washington Counties, est. $425,000. CD 9/10.
General Asphalt Paving Co., 6851 Rising Sun Ave., Phila., Pa., LB **$249,650**. water mains in 12 St., PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Samuel S. Baxter, c/o owner, water comr. Bids Sept. 22.
† **Brothers Constr. Co.**, 1916 Brandywine St., Phila., Pa. LB **$383,800**. Public Works Bldg. and paving, NOY 70187, Spec. 31822, WILLOW GROVE, PA. Dpt. Navy, P. Wks. Office, Phila. Naval Base, Phila., Pa. Bids Sept. 23. CD 9/17.
▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St. Baltimore, Zone 2.
Bero Engineering & Constr. Co., Box 477, Hampton, Va. LB **$1,066,559** slag, LB **$1,067,171** stone, grading, drainage, surf. 1.75 mi. dual hy. on Annapolis By-Pass incl. 2 grade separation structures, Contr. AA 263-1-515, Anne Arundel Co. Bids Sept. 30. CD 9/9.
▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
T. E. Winter, Inc., 462 W. York St., Norfolk, Va. CA $1,595,794. grading, drainage, surf. 4.63 mi. Westminster By-Pass CL 303-2-715, Carroll Co. CD 8/12, under LB.
John D. Sheetz Constr. Co., 1334 Sulphur Spring Rd., Halethorpe, Md. LB **$113,742**. Contr. 5290 HB, road imprvs. various sections, TOWSON, MD. Comrs. Baltimore Co., Court House, Towson, Md. J. Fred Offutt, co. road engr.
Leo Butler Co., 9217 51 Ave., College Park, Md., CA, **$912,701**, interceptor sewer, Contr. D, WILMINGTON, DEL. City, Street & Sewer Dpt., City Hall, Wilmington, Del. Bids Aug. 26. CD 9/10, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Stackler & Frank**, 5 Liberty St., Hempstead, N. Y. Owner Builds. **$25,000,000**, 700 HOUSES and STORES to be called Mid-Island Shopping Center on 200-acre site, Bethpage Rd. and Broadway, HICKSVILLE, N. Y.
Barlow-Meagher Co., Inc., 101 Park Ave., New York 17, N. Y. CA **$575,000**. 2 story CHURCH and SCHOOL, 174 St., between Stratford and Morrison Aves., NEW YORK, N. Y. Roman Catholic Church of St. Joan of Arc, 1372 Stratford Ave., New York, N. Y. CD 9/20/51.
C & M Home Builders, 2534 W. Thompson St., Phila., Pa., Separate Contracts, **$320,000**, RESIDENTIAL DEVELOPMENT, Ormond Ave. and also Park Blvd., CAMDEN, N. J. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.
Andrew Christenson & Son, Inc., 225 W. Grand St., Elizabeth, N. J., LB **$636,003**. Elementary SCHOOL, FORT DIX, N. J. U. S. Housing & Home Finance Agency 346 Broadway, New York, N. Y. Bids Sept. 23. CD 9/10.
▲ **Pine Acres, Inc.**, 230 First St., Lakewood, N. J., Separate Contracts, **$7,000,000**, RESIDENTIAL DEVELOPMENT, New Ampshire and Locust Sts., LAKEWOOD, N. J., Fenick Vogel, 309 Bloomfield Ave., Caldwell, N. J., archt.
Lanci Genovess, 626 Edgemore Rd., Phila., Pa., Separate Contracts, **$350,000**, RESIDENTIAL DEVELOPMENT, Forklanding Rd., etc., MAPLE SHADE, N. J. William D. Faint, 1915 Browning Rd., Pennauken, N. J., archt.
D & S Co., 2211 Fairmount Ave., Phila., Pa. Separate Contracts. **$300,000**. RESIDENTIAL DEVELOPMENT, Lancaster Ave., ARDMORE, PA.
Paul L. A. Keiser, Pottstown, Pa. CA **$645,858**. Elmwood Gardens HOUSING, COATESVILLE, PA. Penna State Planning Bd., State Capitol Bldg, Harrisburg, Pa. S. Kendrick Lichty, 830 Lancaster Ave., Bryn Mawr, Pa., archt.
Louis Kirschner, 185 E. Walnut Lane, Phila., Pa. Separate Contracts. Approx. **$300,000**. RESIDENTIAL development, Florence and West Aves., JENKINTOWN, PA. Herman Polss, 10 S. 18 St., Phila., Pa., archt.
Levitt & Sons, Inc., 3230 Northern Blvd., Manhasset, N. Y. CA, 27x50 ft. fieldstone railroad PASSENGER STATION, 300 ft. long platform, 100 ft. long shelter beds on both sides of the main line, 1,000-car paved parking area, foot of Levittown Blvd., 114-ft. wide cross-town traffic artery, MORRISVILLE, PA. Pennsylvania R. R., J. L. Gressitt, ch. engr., Broad St. Station Bldg., 1617 Pennsylvania Blvd., Phila. 4, Pa. CD 1/12/49.
▲ **Cowen Williams Corp.**, 8501 Temple Rd., Phila., Pa. Separate Contracts. **$1,000,000**. RESIDENTIAL DEVELOPMENT Bayard and Pickering Sts., PHILA., PA.
Samuel Finestone, 5163 Westford Rd., Phila., Pa. Separate Contracts. **$500,000**. RESIDENTIAL DEVELOPMENT, Tabor Rd., PHILA, PA.
Bainum Constr. Co., 6908 Maple St. N. W., Wash., D. C., CA **$400,000**. sixty 2 story, brick, concrete block APARTMENT units, ABERDEEN, MD. Manor, Inc., c/o contractor. Ronald S. Senseman, 327 Carroll St., N. W., Wash., D. C., archt.
Wm. J. O'Meara, P. O. Box 4, Baltimore, Md. Owner Builds. Est. **$304,000**. sixty-four 2 story, 20x32x30 ft., brick HOUSES, 2000 Block Winford Rd., 1700-1800 and 1900 blocks Heathfield Rd., BALTIMORE, MD. Rudolph F. Fisher, c/o owner, archt. CD 7/18/50.
Lerch Homes, Inc., 5212 Harford Rd., Baltimore, Md. Owner Builds. Est. **$400,000**. fifty 2 story, 18x30x26 ft. HOMES, 3300 and 3400 blocks Northway Dr., BALTIMORE, MD. David A. Nevmayaer, c/owner, archt. CD 4/11/50.
Bainum Constr. Co., 6980 Maple St. N. W., Wash., D. C. CA **$350,000**. fifty 12 story, brick, concrete block APARTMENT units, FREDERICK, MD. Stewart Manor, Inc., c/o contractor. CD 3/13/52.
Bainum Constr. Co., 6980 Maple St. N. W., Wash., D. C., CA **$310,000**. forty 2 story, 60x137x106 ft., frame, concrete U-shaped HOUSING units, Fifth St., and Gorman Ave., LAUREL, MD. Laurel Manor, Inc., c/o contractor. Ronald S. Senseman, 327 Carroll St., N. W., Wash., D. C., archt. CD 2/29/52.

(Continued on page 71)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction
(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD. Engineering News-Record Construction Daily

Paving the way for savings

● When you use asphalt construction or resurfacing for city street or highway, you're paving the way for real savings in time and money. When you use Standard Oil asphalt you're gaining even greater road-building economy.

You save time because easier laying of asphalt, use of lighter and faster equipment, and the rapid setting of asphalt all help to speed road construction.

You save money because faster paving means fewer man-hours and lower labor costs. Local aggregate can be used to keep material and material handling expenses at a minimum. The durability of asphalt paving brings savings in the long run. Asphalt and heavy aggregate, mixed, make strong road foundations. Top courses of asphalt, stone, and sand present long-wearing, waterproof surfaces. Maintenance, when necessary, takes a minimum of time, labor, and materials.

You add further to these savings by using Standard Oil asphalt. With five asphalt-producing refineries located throughout the Midwest, Standard makes the haul to your site a short one. Prompt, reliable shipments eliminate work delays. Freight costs are at a minimum. A Standard Asphalt Representative will be glad to work with you on your job needs. For his services, write: Standard Oil Company (Ind.), 910 S. Michigan Avenue, Chicago 80, Illinois.

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STANDARD

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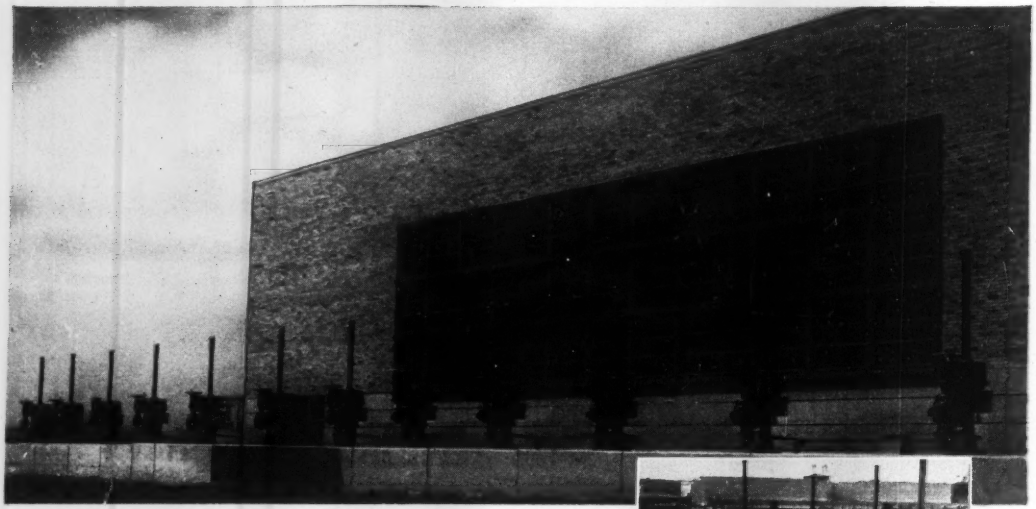
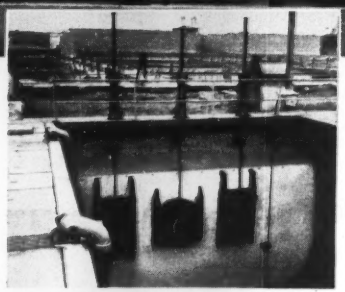
ALL OF NEW YORK CITY'S Modern Sewage Plants are CHAPMAN-equipped





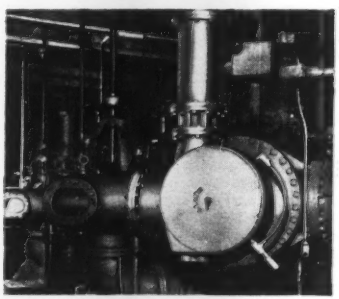
CHAPMAN SLUICE GATES at Hunt's Point.)

Above is the Hunt's Point Plant of the New York City Sewage System . . . showing the motor-operated CHAPMAN Sluice Gates controlling the grit chambers.

Begun in the early 1930's, construction and operation of New York's City's Sewage Treatment Works have done wonders to mitigate the pollution of Metropolitan waters.

And in all of these modern plants, you will find many types of Chapman material . . . Sluice Gates, Cone Valves used as check valves, Iron Body Gate Valves...and many different types of operating mechanisms such as floor-stands, motor units and hydraulic cylinders.

And so does New York City, in the vanguard of the world's most modern municipalities, protect both its taxpayers' dollars and their future health *by placing CHAPMAN in charge of Flow-Control.*



CHAPMAN CONE CHECK VALVES on Raw Sludge Pumps at Rockaway Plant.

THE CHAPMAN VALVE MFG. CO.
Indian Orchard, Massachusetts

(Continued from page 68)

▲ **Consolidated Engineering Co., Inc.,** 20 W. Franklin St., Baltimore, Md. CA foundations;

United Engineers & Constructors, Inc., 1401 Arch St., Phila., Pa. CA steel PLANT expansion, POWER PLANT, 205x75x80 ft., 56x31x30 ft., Blast Furnace No. 9, battery of 64 coke ovens, impr. open hearth, exten. to MILL bldgs., addnl. facilities, SPARROWS POINT, MD. Total est. **$20,000,000.** Bethlehem Steel Co., 701 63 St., Bethlehem, Pa. CD 12/26/51.

▲ **Magazine Brothers,** 1010 Vermont Ave. N. W., Wash., D. C. CA **$3,500,000.** 500 APARTMENT units Oxen Hill Development, UPPER MARLBORO, MD. Spring Garden Associate, 8007 Eastern Ave., Silver Spring, Md. Corning & Moore, 1726 M St., N. W., Wash., D. C., archts. CD 4/25.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **West Virginia**—CABLE TROUGH—B.A. 10/22—U. S. Eng., 237 Fourth Ave., Huntington, Zone 18, cable trough near Guthrie, Serial No. ENG 46-022-53-15. Extended date. CD 10/16.

BIDS ASKED—BUILDINGS

Va., Louisa — SCHOOL — B.A. 10/27 — Louisa County School Bd., Louisa, Apple Grove Elementary School alterations, addns. Plans deposit $5. S. J. Makielski, Barracks Rd., Charlottesville, archt.

S. C., North Augusta—HIGH SCHOOL—B.A. 10/29—North Augusta School Dist. 6, North Augusta, high school. Plans deposit $25. Extended date. Scroggs & Ewing, 1331 Green St., Augusta, Ga., archts. CD 7/30.

Va., Yorktown—HOUSING—Bids Asked—P. Wks. Office, Fifth Naval Dist. U. S. Naval Base, Norfolk, to select sponsor to construct, manage and finance, 114 Housing Units, Naval Mine Depot. $800,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Stone & Webster Eng. Corp., 1403 Roseneath Rd., Richmond, Va., CA Approx. **$400,000.** Design and construct electric transformer in Oakwood Terrace Sect., sub-station to incl. transformer and switching, NORFOLK, VA. Virginia Electric & Power Co., Boush and Bute Sts., Norfolk, Va. CD 3/20.

KENTUCKY—Commonwealth of Ky., Frankfort,

Traylor Bros. Inc., Upper Mt. Vernon Rd., Evansville, Ind. LB **$358,797.** Alternate No. 2 bridge repair with structural plate flooring Paducah-Illinois State line Rd., MP 72-13-2, McCracken Co. Bids Sept. 26. CD 9/10.

▲ **KENTUCKY**—Commonwealth of Ky., Frankfort,

Davidson & Cocke, Mayfield, Ky. LB **$105,890.** Bank or creek grav. 4.784 mi., Linton-Canton Rd., S 181 (2), SP 111-414, Trigg Co.;

Licking River Limestone Co., West Liberty, Ky. LB **$112,056.** Reconstr. traffic bound limestone 4.46 mi. Oil Springs-Paint Creek-Hargis Creek Rd., RS 58-417, 58-457, Johnson Co.;

Marlowe Constr. Co., First National Bank Bldg., Lexington, Ky. LB **$93,954.** Reconstr. traffic bound limestone 4.063 mi. Herd-Elias Rd., RS 55-329, Jackson Co.;

Spickard & McClure Constr. Co., Jamestown, Ky. LB **$89,464.** Reconstr. traffic bound limestone 3.652 mi., Somerset-Elihu-Burnside Rd., RS 100-855, Pulaski Co.;

Lyons & Breeden, Rogersville, Tenn. LB **$187,029.** traffic bound limestone 2.206 mi. Hardyville-Greensburg Rd., S 213 (1), SP 50-60, 44-116, Hart and Green Counties;

Greenville Quarries, Inc., Greenville, Ky. LB. **$60,214.** traffic bound limestone 3.409 mi. Robards-Niagara-Hebberdsville Rd., S 241 (1), RS 51-579, Henderson Co.;

R. E. Gaddie, Inc., Bowling Green, Ky. LB. **$145,150.** bit. surf. Class I 2.222 mi. Brandenburg-Tip Top Rd., S 65 (2), SP 82-23, Meade Co.;

Derby Road Building Co., Inc., 3000 Crittendon Dr., Louisville, Ky. LB. **$480,049.** traffic bound limestone, bit. surf. 1.153 mi. Inner Belt Line, U 528 (5), SP 56-898, Jefferson Co.;

Lovell & Hart Constr. Co., 708 Henry Clay Blvd., Lexington, Ky. LB. **$111,356.** local bank or creek grav. 3.492 mi. Sexton Creek Rd., S 407 (1), RS 97-176, Owsely Co., LB. **$96,276,** traffic bound limestone 3.492 mi. Toler-Ransom Rd., S 287 (1), RS 98-103, Pike Co.;

T. M. Hook, Hardinsburg, Ky. LB. **$108,540,** traffic bound limestone 5.287 mi. Early's Chapel-Mack Rd., S 419 (1), RS 109-428;

Winston Ford Co., Prestonburg, Ky. LB. **$174,609.** reconstr. traffic bound slag 7.588 mi. Banner-Prater Creek-Harold Rd., RS-36-216, 36-476, Floyd Co.;

Kentucky Road Oiling Co., Frankfort, Ky. LB. **$72,013.** reconstr. traffic bound slag 3.095 mi. Wolf Creek Rd., RS 80-181, Martin Co. Bids Sept. 26. CD 9/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Wigton Abbott Corp.,** 1225 South Ave., Plainfield, N. J. CA. Approx. **$1,000,000.** 2 story, masonry 35,000 sq. ft. PLANT for development activities of Organic Dept., Nitrogen Div., HOPEWELL, VA. Allied Chemical & Dye Corp., 61 Broadway, New York, N. Y. R. W. Haines, c/o owner, civil engr. CD 10/3.

Conrad Bros., Citizens Bank Bldg., Norfolk, Va., LB. **$376,700.** Bayview Elementary SCHOOL, NORFOLK, VA. Norfolk School Bd., Bank and Charlotte Sts., Norfolk, Va. Bids Sept. 30. C 9/11.

Lucas & Fralin, 2518 Williamson Rd., Roanoke, Va., LB. **$246,572,** WAREHOUSE and OFFICE. ROANOKE, VA. Tidewater Supply Co., Inc., 355 Salem Ave. S.W.

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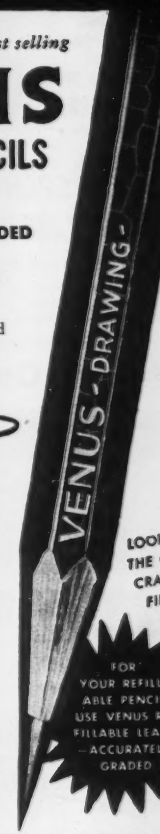

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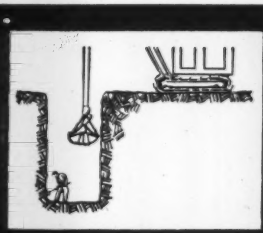

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Roanoke, Va. Stone & Thompson, 609 S. Jefferson St., Roanoke, Va., archts.

▲ Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa. CA. turbo generating unit for POWER PLANT for which site is not selected;

Riley Stoker Corp., 99 Neponset St., Worcester, Mass., boilers, LOUISIANA. Total est. $14,000,000, Louisiana Power & Light Co., (subsidiary of Middle South Utilities, Inc.), 142 Delaronde St., New Orleans, La. Ebasco Services, Inc., 2 Rector St., New York, N. Y., engr.

MIDDLE WEST

BUILDINGS

LOW BIDS AND CONTRACTS

Insurance Co. of North America, 1600 Arch St., Phila., Pa., Separate Contracts, $400,000, OFFICE addns., alterations, RICHMOND, IND. Day & Zimmerman, 1700 Sansom St., Phila., Pa., engrs. CD 6/25.

▲ Bryant S. Detwiler Co., 2110 Penobscot Bldg., Detroit, Mich. LB $16,870,000. 20 story superstructure CITY-COUNTY BLDG., DETROIT, MICH. City and Wayne Co., Albert E. Cobo, chn. City-County Bldg. Auth., Detroit, Mich. Bids Oct. 1. CD 7/30.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† N. M., Albuquerque—MESS-ADMINISTRATION BLDG., etc.—B.A. 10/29—U. S. Eng., Box 1538, mess-administration bldg., compressor house, Kirtland Air Force Base. Approx. $300,000. Plans deposit $25. CD 8/28/51.

† Kan., Topeka—GAS DISTRIBUTION SYSTEM—B.A. 10/30—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. gas distr. sys., Forbes Air Force Base, Eng. 23-028-53-20. CD 5/19.

SOON LETS CONTRACTS—BUILDINGS

▲ Ark., Gun Springs—FACTORY—Reynolds Metal Co. 3 and Grace Sts., Richmond, Va., soon lets contract 15 aluminum factory buildings, $33,000,000. J. Gordon Turnbull, 2630 Chester St., Cleveland, O., engr. CD 3/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Leslie Miller, Inc., 2914 E. Rosedale St., Fort Worth, Tex., LB $410,778, est. $442,425, hydrant refueling facility at Carswell Air Force Base, ENG 41-443-53-9, FORT WORTH, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Oct. 1. CD 9/12.

Texas Bitulithic Co., 2121 Irving Bldg., Dallas, Tex. CA. $838,348. approx. 16 mi. street asph. type and concrete paving, curbs and gutter, MIDLAND, TEX. City, Midland, Tex. Bids Aug. 11. CD 9/19.

† J. W. Bateson Constr. Co., 1102 Irwin-Keasler Bldg., Dallas, Tex., LB $406,230, est. $500,000. Warehouse "A", Shepherd Air Force Base, Inv. No. Eng. 34-066-53-20. WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Sept. 26.

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver.

Northwestern Engineering Co., 6000 Colorado Blvd. Denver, Colo., CA, $264,984, est. $163,363 stabilization, road mix asph. surf. 5.778 mi. SH 10 between Dove Creek and Utah line Colo. Proj SP 58-10-512, Dolores Co. Bids Sept. 24, awarded Sept. 25. CD 9/17.

BUILDINGS

LOW BIDS AND CONTRACTS

Schwieger Constr. Co., 1525 Michigan St., Kansas City, Mo. CA. Est. $130,000. 12,000 sq. ft. truck TERMINAL, 1700 Tracy St., KANSAS CITY, MO. Columbia Terminal Co., c/o F. R. Gaylord, operator, 1209 Washington St., St. Louis, Mo. Fred Nauman, 714 N. Woodlawn St., Kirkwood, Mo., archt. Awarded Sept. 29.

Estrin Constr. Co., 828 E. 9 St., Kansas City, Mo. CA., general contract;

A. D. Jacobson Plumbing & Heating Co., 2030 Central St., Kansas City, Mo., plumbing;

General Heating & Plumbing Co., 8012 Pasco St., Kansas City, Mo., heating;

Thorla Contracting, 3150 Fairfax Rd., Kansas City, Kan., excavating for SERVICE BLDG. and GARAGE, NORTH KANSAS CITY, MO. Total est. $272,000. Riss & Co., c/o R. R. Riss, Jr., Ninth and Allen Sts., North Kansas City, Mo. CD 8/14.

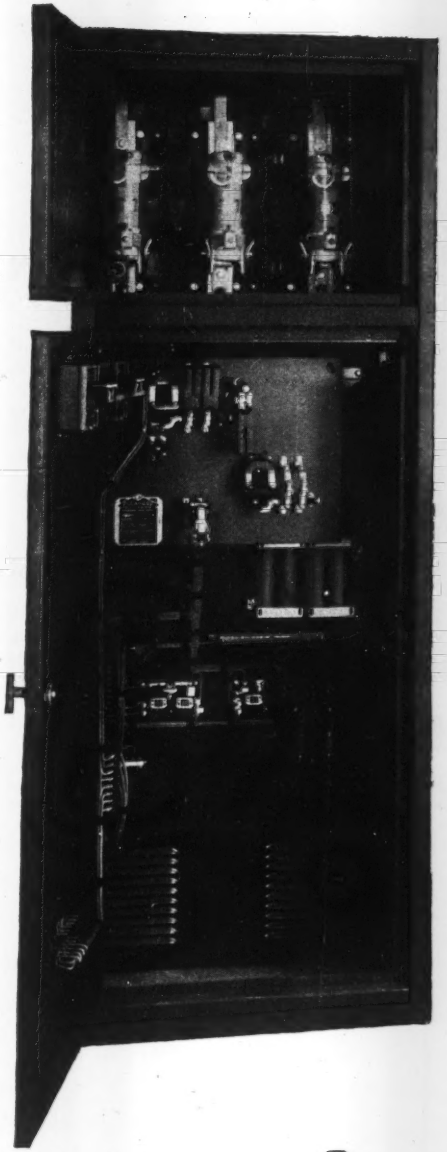
Condon National Bank, 814 Walnut St., Coffeyville, Kan. Separate Contracts. Est. $300,000. BANK addn., alterations, COFFEYVILLE, KAN. Bank Building & Equipment Corp. of America, 906 Sidney St., St. Louis, Mo., archts.

▲ W. R. Holway & Assoc., 302 E. 18 St., Tulsa, Okla., CA. design and general construction bldgs. chemical PLANT, capacity 180 tons p.d. ammonia and 275 tons p.d. urea, incl. admin. bldg., gate and change house, maintenance bldg., warehouse, etc.;

Foster Wheeler Corp., 165 Broadway, New York, N. Y., CA. process facilities, for same, 4 mi. southeast of PRYOR, OKLA. Est. $17,000,000-$20,000,000. Deere & Co., 1325 Third Ave., Moline, Ill. CD 7/8.

Garden Oaks Constr. Co., 3205 N. Shepherd St., Houston, Tex., CA. $309,600, 18 DWELLINGS, HOUSTON, TEX. Garden Oaks Realty Co., 3205 N. Shepherd St., Houston, Tex. CD 9/23.

(Continued on page 75)



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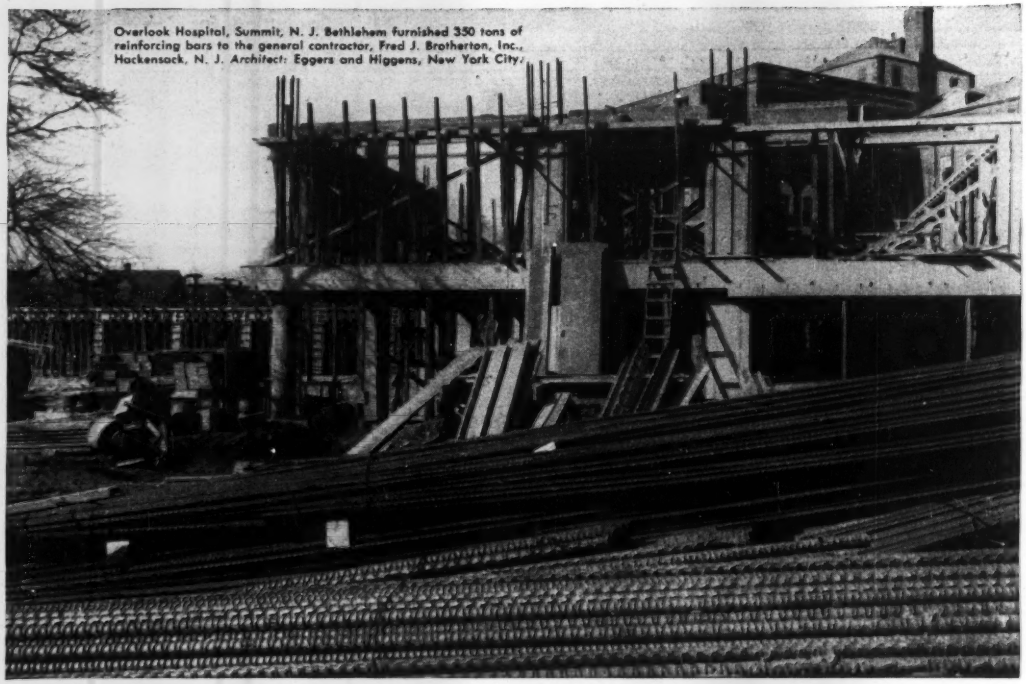

Overlook Hospital, Summit, N. J. Bethlehem furnished 350 tons of reinforcing bars to the general contractor, Fred J. Brotherton, Inc., Hackensack, N. J. *Architect:* Eggers and Higgens, New York City.

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(Continued from page 72)

Magnet Cove Barium Corp., 5001 Richmond Rd., Houston, Tex. cancelled bids, research LABORATORY, OFFICE, HOUSTON, TEX. Est. $300,000. Will re-advertise. CD 8/7.

▲ **Hudson Eng. Corp.**, 2711 Danville St., Houston, Tex. CA. Approx. $1,225,000. Design and construct gasoline PLANT, near ROPESVILLE, TEX. Honolula Oil Corp. and Signal Oil & Gas Co., Ropesville, Tex. CD 9/26.

F. A. Nunnelly, Box 1567, San Antonio, Tex., CA. $287,120. addnl. bottling PLANT expansion. CA. $207,515, addnl. storage cellars. SAN ANTONIO, TEX. Pearl Brewing Co., 312 James St., San Antonio, Tex. CD 9/24.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Otis Williams & Co.**, Kennewick, Wash., LB. $402,262, est. $334,550, selected earth blanket for Potholes East Canal, Station 863 plus 00 to 1128 plus 00, Columbia Basin Proj., Spec. DC 3780, WASHINGTON. Bureau Reclamation, Dpt. Interior. Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Sept. 23. CD 9/10.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Henly Constr. Co.**, Boise, Idaho, LB $637,500 producing 150,000 cu. yd. aggregate and operating concrete mixing plant at Hanford Works, RICHLAND, WASH. Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash. 25, D. C. CD 6/30.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

Alaska, Ketchikan—B.A. 11/10—City, City Hall, 4,500 ft. 7x8 ft. tunnel, clearing for penstock line, 4,000 ft. 2.3-kv feeder line for expansion of Beaver Falls hydroelectric project. Plans deposit $25. W. D. Shannon & Assoc., Stuart Bldg., Seattle 1, Wash. engrs. CD 1/16, under Unclassified.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **ALASKA**—Alaska Road Comn., Dpt. Interior, Juneau, **Morrison-Knudsen Co., Inc.**, 314 Broadway, Boise, Idaho, LB $448,991, clearing, grubbing, grading, drainage 6.8 mi. Sect. A-2, Glenn Hy., Fort Richardson by-pass. Bids Sept. 29. CD 9/11.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Dominion Constr. Co. Ltd., 150 W. 1 Ave., Vancouver, B. C., CA, $977,683, Sect. A of Okanagan Flood Control comprising channel construction from Skaha Lake to Okanagan Lake and constr. control dams at Okanagan Lake and Okanagan Falls, BRITISH COLUMBIA, B. C. Government, Douglas Bldg., Victoria, B. C. Bids Aug. 14, awarded Sept. 26. CD 9/4, under LB.

Dominion Bridge Co. Ltd., 2450 Boundary Rd., Vancouver, B. C., CA $527,538, supply and delivery 54 in. steel pipe for 2½ mi. extension to Seymour water supply system, VANCOUVER, B. C. Greater Vancouver Water Dist., 500 Beatty St., Vancouver, B. C. Bids Sept. 18, awarded Sept. 25. CD 8/27.

BUILDINGS

LOW BIDS AND CONTRACTS

Born Constr. Co., 186 Owen Blvd., York Mills, Ont. Owner Builds, $350,000. 3 story, bsmnt., 100x134 ft., 41 unit, steel, brick APARTMENT BLOCK, Eglinton Ave. E. and Laird Dr., LEASIDE, ONT. J. H. Daniels, 2916 Bloor St. W., Toronto, Ont., archt.

Nordic Development Corp., 6001 Cote de Liesse Rd., Montreal, Que., Own Forces, $350,000, 40,000 sq. ft., concrete, brick FACTORY, Cote de Liesse Rd., MONTREAL, QUE.

Proposed Projects

WATER SUPPLY

Calif., Daly City—City, City Hall, $390,000 bond election Oct. 28, 3 m.g. reservoir, modernize present water system. CD 8/20.

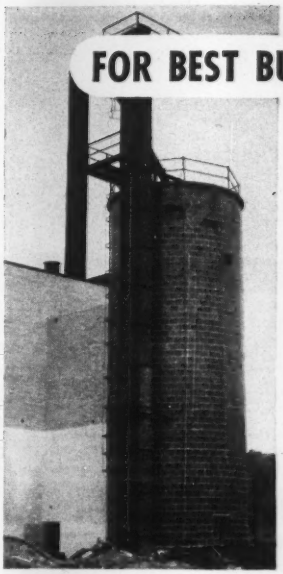
Ill., Hillsboro—City, pumping station, water treatment works, $500,000. CD 9/6/45.

▲ **Kan., Wichita**—City, c/o C. C. Ellis, clk., bond election Nov. 4, addnl. water supply, $11,830,030. CD 8/7.

▲ **Mo., Kansas City**—City, c/o Melvin P. Hatcher, dir. Water Dpt., City Hall, bond election Nov. 4, expansion and flood-proofing water sys., increased facilities, etc., $16,000,000. Jas. B. Ramsey, water dpt. engr. CD 4/27/51.

▲ **Tex., Dallas**—City, City Hall, Main and Harwood Sts., 54 in. water main from Bachman Water Plant to Sunset Reservoir, $2,000,000; 2 m.g. steel elevated water storage tank, in northeastern part of city, $400,000. Koch & Fowler, 3900 Lemmon St., consult. engrs. CD 5/8.

▲ **Tex., Fort Worth**—City, c/o W. O. Jones, mgr., City Hall, Holly Plant imprvs., incl. new pumps and switch-



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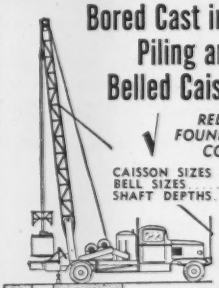

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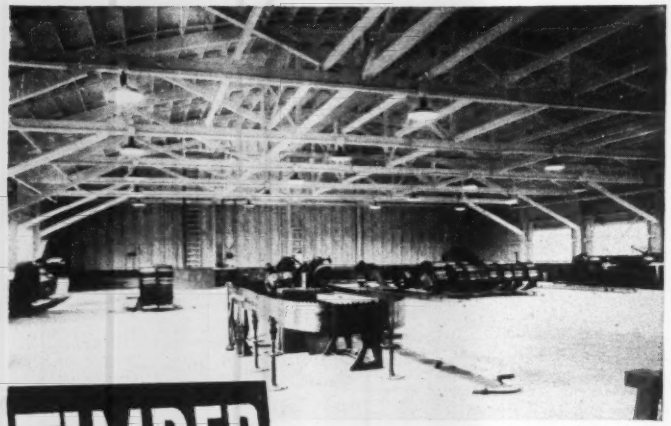

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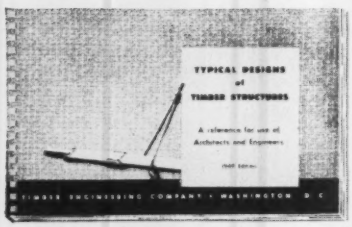

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SEWERS, WASTE DISPOSAL

▲ **Calif., Los Angeles**—City, City Hall,
Tampa Ave. Interceptor, $137,000;
Terminal Island Treatment Plant Outfall Sewer exten., $116,220;
Haskell Ave. Interceptor Sewer, $150,000;
Winnetka Ave Interceptor Sewer, $215,000;
LaCienega and San Fernando Valley Relief Sewer Unit "A", $3,170,000;
Terminal Island Sewage Treatment Plant, $450,000;
Armacost Ave. and Santa Monica Blvd., Relief Sewer, $125,000;
Valley Outfall Relief Sewer, Section "B", $700,000;
Ohio Ave. and Federal Ave. Relief Sewer, $310,000;
District 15, Relief Sewer, $729,244;
sanitary sewer in Moorpark St. and Balboa Ave., $100,000, all foregoing at Los Angeles;
sanitary sewers in Walker Ave. and 36 St., San Pedro, $110,000.
Sunland-Tujunga Interceptor Sewer Section "B", Sunland-Tujunga, $225,000.
sanitary sewers in 32 Ave. and Speedway, $160,000.
sanitary sewer in Inglewood Blvd. and Braddock Dr., $194,000.
sanitary sewers in Slauson Ave. and Braddock Dr., $220,000.
sanitary sewers in Harbor St. and Beach Court, $128,000, all foregoing at Venice.
East Wilmington Interceptor Sewer, Wilmington, $532,800. Lloyd Aldrich, c/o owner, engr.
Ill., New Lenox—Village, water and sewerage system, $450,000. Warren & Van Praag, 253 Park St., Decatur, consult. engrs.
Kan., Junction City—City, $500,000 bond election Nov. 4, sewage disposal plant, $650,000. Wilson & Co., 223 N. Santa Fe St., Salina, consult. engrs. CD 5/24/49.
▲ **Kan., Wichita**—City, c/o C. C. Ellis, clk., bond election Nov. 4, storm sewers, $9,893,807, sewage treatment extens., $1,089,000, West Side Sewer, $4,780,000.
O., Sylvania—Village sewage treatment plant and sewerage sys. $400,000. H. A. Stepleton, village engr.
▲ **R. I., Providence**—City, Sewer Dpt., City Hall, sewage plant, Fields Point. $3,500,000. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., consult. engrs.
Tenn., Springfield—City, voted bonds, sanitary sewer imprvs. $585,000. CD 3/26/51.
Tex., Lubbock—City, sewage disposal plant. $400,000. H. N. Roberts & Assoc., Lubbock, consult. engrs. CD 7/11.
▲ **Va., Charlottesville**—City, City Hall, sewerage sys. imprvs., incl. 2 sewage treatment plants. $1,832,200. Polglaze & Basenberg, 812 S. 27 St., Birmingham, Ala., consult. engrs. James E. Bowen, Jr., city mgr. CD 11/15/51.

BRIDGES

▲ **CALIFORNIA**—California Toll Bridge Authority, San Francisco,
Marin and Contra Costa Counties—4 mi. San Rafael Richmond bridge with 2 steel cantilever spans over San Francisco Bay, $72,000,000. Coverdale & Colpitts, 120 Wall St., New York, N. Y., and Ralph A. Tudor, 74 New Montgomery St., San Francisco, consult. engrs.
Ind., South Bend—St. Joseph Co., Court House, bridge over St. Joseph River on Buttersweet Rd. $450,000.
Tex., Fort Worth—Tarrant Co. W. C. & I. D., c/o J. B. Hogsett, pres., Court House, structural steel bridge over Trinity River on Cold Springs Rd. $400,000. Freese & Nichols, 407 Danciger Bldg., consult. engrs.

STREETS AND ROADS

▲ **Calif., Los Angeles**—City, City Hall, imprv. 9 St. from Spring St. to Vermont Ave., $153,000; imprv. Franklin Ave. from Oxford to Bronson Aves., $111,500; imprv. Imperial Hy. from Central Ave. to Main St., $520,000; imprv. Manchester Ave. from east city boundary to Lincoln Blvd., $152,300; imprv. Normandie Ave. from 62 St. to Florence Ave., $100,000; imprv. Victory Blvd. from Vesper to Kister Aves., $117,000. Lloyd Aldrich, c/o owner, engr.
Mich., Grand Rapids—City, P. Wks. Dpt., paving 8 mi. streets, resurf. various streets incl. trunk roads, $500,000. Millard M. Moore, City Hall, city engr. CD 6/6.
▲ **RHODE ISLAND**—State, Purch. Agent, State House, Providence,
North Kingstown and South Kingstown—North-South relocation, north approx. 3 mi., south approx. ½ mi. $1,500,000.
Tex., San Saba—San Saba Co., county road imprvs., repairing, surf. $100,000.

EARTHWORK, WATERWAYS

▲† **California**—Bureau Reclamation, Dpt. Interior, Interior Bldg., 19 and C Sts. N. W., Wash., 25, D. C. water conservation project, incl. Vaquero Dam storage reservoir, on Cuyama River, levees, etc. Santa Maria River Basin, Santa Barbara Co. $24,575,000. CD 4/14/44.

▲ Calif., Oxnard—Unified Water Conservation Dist., 806 Railroad Ave., Santa Paula, conduit system from Topa Topa and Felicita Dams to Oxnard Plain and Pleasant Valley Areas, $2,500,000. Julian Hinds, c/o owner, engr.

AIRPORTS

▲† Mass., Weymouth—BARRACKS—First Naval Dist., 495 Summer St., Boston, plans by W. Chester Browne & Assoc., 184 Boylston St., Boston, 850-men barracks, five 2 story buildings, $2,500,000; control tower C & C IC bldg., NOY 7200, $200,000, Naval Air Station, South Weymouth. CD 8/29.

▲† Va., Norfolk—AIRPORT IMPRVS.—P. Wks. Officer, Fifth Naval Dist., U. S. Naval Base, airport imprvs. at Norfolk Naval Air Station, incl. approx. 60,000 sq. yd. paving, hydraulic fill and other work. $1,200,000.

LATIN AMERICA

Mexico, Socorro Island—Gen. A. Morales Salas, Joseph Wekstein, c/o Srta. de la Economia Nacional (National Economy Ministry), Mexico City, plans sulphur works, incl. 200-ton daily refinery. $827,000.

PUBLIC BUILDINGS

▲ Ala., Florence—PLANT—City, City Hall, plans by Turner & Northington, Medical Arts Bldg., plant. $1,000,000. CD 8/13.

Calif., Bakersfield—SCHOOL—Standard School Dist. of Kern Co., $490,000 bond election Oct. 24, school.

▲ Calif., Richmond—COUNTY OFFICE—Contra Costa Co., Court House, $1,350,000 bond election Nov. 4. county bldg. CD 11/9/51.

▲ Calif., San Francisco—HOUSING—San Francisco Housing Auth., 440 Truk St., plans by Milton Pflueger, 580 Market St., San Francisco, 164 unit, low-rent public housing, Project on Alemany near St. Mary's Playground, CAL L-16, $1,500,000. CD 5/4/51.

▲ Calif., San Rafael—CIVIC CENTER—Marin Co., Court House, $3,500,000 bond election Nov. 4 civic center.

▲ Calif., San Rafael—COURT HOUSE—Bd. Supervs., Marin Co. Court House, $1,500,000 bond election Nov. 4, court house addn. CD 3/13.

▲ Calif., Taft—SCHOOL—Taft Elementary School Dist., Taft, $1,200,000, bond election Oct. 21, replacement of schools.

▲ Calif., Torrance—SCHOOL—Torrance Unified School Dist., 2335 Plaza Del Amo, plans by Schreiber & Peterson 2380 S. Atlantic Ave., Los Angeles, high school, 182 St. and Yukon Ave. $1,800,000. CD 3/4.

▲ Calif., Whittier—SCHOOLS—Whittier Union High School Dist., 215 W. Hadley St., $4,850,000 bond election schools.

▲ Conn., New Haven—HOUSING—City Housing Auth., 200 Orange St., plans by Schilling & Goldecker, 30 Colony St., New Haven, PHA Conn. 4-7 Housing incl. four 8 story and two 10 story bldgs., Elm Haven-Ashmund-Webster and Canal Sts. $4,390,000. Hubbard Richard & Blakeley, 110 Whitney Ave., New Haven, consult. engrs. Chas. Gurrier & Assocs., 967 Farmington Ave., Hartford, landscape archts. CD 8/29/50.

Fla., Fort Lauderdale—SCHOOL—Broward Co. Bd. P. Instruction, Court House, plans by Robert M. Little & Wm. G. Crawford, 220 S. E. 8 Ave., and W. T. Vaughn, 090 E. Las Olas Blvd., Sunrise Junior-Senior High School, $750,000. CD 3/10/50.

▲ Fla., Chattahoochee—HOSPITAL, etc.—Florida State Improvement Comn., Caldwell Bldg., Tallahassee, T. B. Hospital, $1,500,000; infirmaries, $1,600,000; boiler plant, $975,000; electric sys. imprvs. $133,000, at State Hospital.

▲ Fla., Tallahassee—SCHOOL—State Bd. Control, Tallahassee, plans by Guy C. Fulton & Assocs., state archts., Tallahassee, geology bldg., $350,000; demonstration school at Florida State College, $875,000.

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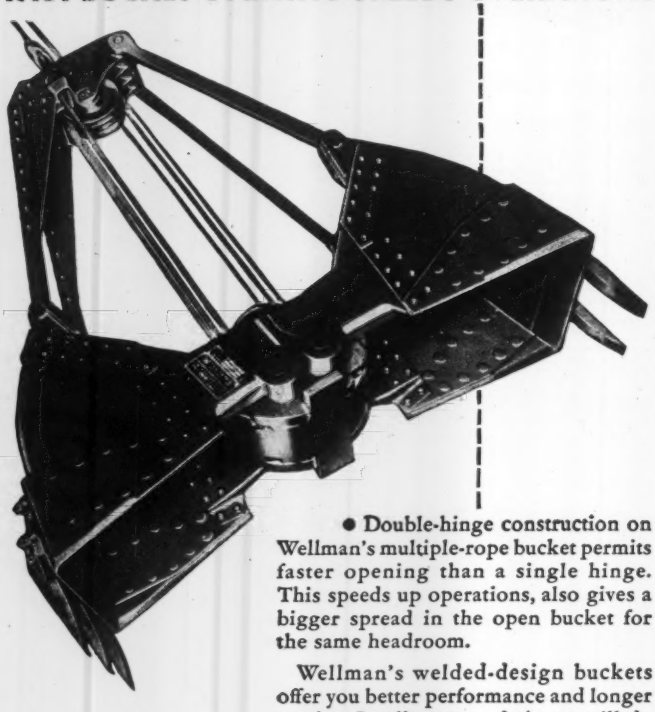

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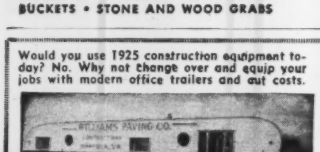

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Ga., Donalsonville—SCHOOL—Semionle Co. Bd. Educ., Donalsonville, plans by Albany Architects & Engineers, 200½ Broad St., Albany, Seminole County Training School addn. $500,000. CD 6/26/47.

▲ **Ga., Jackson**—SCHOOL—Butts Co. Bd. Educ., Jackson, plans by Bothwell & Nash, 208 Roswell St., Marietta, Consolidated Colored School, $600,000; plans by Wm. J. J. Chase & Assocs., Candler Bldg., Atlanta, Jackson White High School addn., $450,000.

▲ **Ga., McDonough**—SCHOOLS—Henry Co. Bd. Educ., McDonough, plans by Moscowitz, Willner & Millkey, 761 Peachtree St. N.E., Atlanta, Henry County Training Shool, $850,000; Flippen Elementary School, $300,000.

Ga., Statesboro—SCHOOLS—Bulloch Co. Bd. Educ., Statesboro, plans by R. Kennon Perry, Mortgage Guarantee Bldg., Atlanta, Negro High School, $550,000; plans by Kuhlke & Wade, Campbell Bldg., Augusta, White High School, $310,000.

▲ **La., Pineville**—TUBERCULAR BLDG., etc.—State Bldg. Auth., State Capitol, Baton Rouge, plans by Barron, Heinberg & Brocato, 1015 Wisteria St., Alexandria, tubercular bldg., $750,000; plans by Charles T. Roberts, Guaranty Bank Bldg., Alexandria, dormitory, $300,000, at Central Louisiana State Hospital.

Me., Bangor—SCHOOL—City, City Hall, plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, brick, steel, concrete Junior High School, $500,000.

Me., Westbrook—SCHOOL—City, Bldg. Comn., Richard Libby, City Hall, plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, brick steel, concrete high school, Stroudwater St. $600,000.

Mich., Birmingham—SCHOOL—City, Bd. Educ., Birmingham, plans by Swanson Associates, Long Lake Rd., Bloomfield Hills, 2 story, bsmnt., brick, steel elementary school, Beverly Hills sect. $800,000. CD 8/29.

▲ **Mich., Coldwater**—SCHOOL—Bd. Educ., Coldwater, $1,473,000 bond election Nov. 4, high school.

▲ **Mich., East Lansing**—LIVING CENTER—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, plans by Ralph R. Calder, 1212 Kales Bldg., Detroit, brick, steel men's living center, incl. 3 dormitories, 1 food service structure, Michigan State College, Michigan Ave. and Harrison Rd., $11,500,000 (First unit $7,500,000.) CD 5/2.

▲ **Mo., Kansas City**—SCHOOLS—Bd. Educ., c/o Dr. G. Dewey Smith, acct. supt., Library Bldg., Southeast High School addns., $1,000,000; Dunbar School, $600,000; East High School addns. $860,000; rehabilitation of Garfield School, $300,000; Hartman School, $600,000; Linwood School, $700,000; Lowell School addn., $360,000; Martin School, $600,000; West Junior High School addns., $550,000; Wheatley School, $300,000. CD 4/13/51.

▲ **Mo., Kansas City**—INSTITUTIONAL BLDGS.—Jackson Co., Court House, Independence, $2,325,000 bond election Nov. 4, imprvs., addns. to institutional bldgs.

▲ **N. C., Durham**—SCHOOLS—Durham Co. Bd. Educ., Durham, bond election Nov. 4, school imprvs. $4,000,000. CD 7/18/47.

O., Bellefontaine — SCHOOL — Bd. Educ., Bellefontaine, bond election Nov. 4, McBeth School addn. and remodeling Central School, imprv. high school. $954,000.

O., Bellefontaine—SCHOOL—Bd. Educ., Bellefontaine, Dist., Westmont, plans by Hunter, Caldwell & Campbell, U. S. Bank, Johnstown, 1 story, part bsmnt., 90x200x289 ft., U-shaped steel, brick grade school. $660,500.

▲ **O., Hamilton**—SCHOOL—Bd. Educ., 322 Dayton Ave., $4,750,000 bond election Nov. 4, school building program. Bond election June 26, defeated. CD 5/7.

O., Wellington—SCHOOL—Bd. Educ., $500,000 bond election Nov. 4, school addn., music and agricultural shop.

▲ **Pa., Wattsburg**—SCHOOLS—Joint School Dist. of Amity Twp. Wattsburg, plans by Raymond Viner Hall, R. D. 1, Port Allegheny, 1 story brick, block, grade and high school. $1,000,000.

▲ **Tenn., Knoxville**—BUILDINGS—University of Tennessee, Knoxville, women's dormitory, $500,000; library addn., $450,000; geology bldg., $500,000; museum, $300,000; television station, $300,000. CD 8/20/43.

S. C., Gaffney—HOSPITAL—Cherokee Co., Gaffney, voted bonds July 8, hospital. $800,000. CD 6/26.

▲ **Tex., Denison**—SCHOOLS—Denison Independent School Dist., Denison, voted bonds Sept. 23, Senior High School-Gymnasium, $700,000; high school addns. $300,000; playgrounds, athletic courts, football diamond and facilities, $150,000.

Tex., Littlefield—COURT HOUSE, etc.—Lamb Co., Littlefield, bond election Oct. 11, brick, tile court house and jail, concrete fdn. $600,000.

Tex., San Antonio—CULTURAL CENTER—City, City Hall, Military Plaza, cultural center in San Pedro Park. $650,000. J. L. Dickson, Dir. P. Wks. Eng.

▲ **Tex., Victoria**—SCHOOLS—Victoria Independent School Dist., Victoria, voted bonds, elementary school, Bloomington Hy., $409,000; Aloe School addns., $371,000, Jordan C. Ault & Assoc., Victoria, archts.; Junior High School, $1,055,000, Fehr & Granger, 502 E. 5 St., Austin, archts.; Crestwood Elementary School, $365,000. Arne G. Engberg, 3810 Fannin St., Houston, archt. CD 6/25.

▲ **Va., Richmond**—HIGH SCHOOL—Henrico Co. School Bd., County Court House, 22nd and Main Sts., plans by Dixon & Norman, 1103 E. Main St., brick, concrete masonry Tuckahoe High School. $1,000,000. CD 5/6.

(Continued on page 80)

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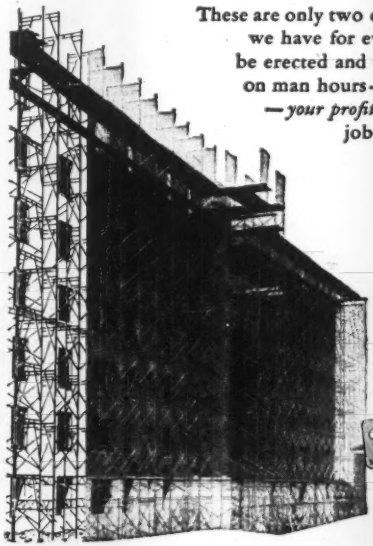

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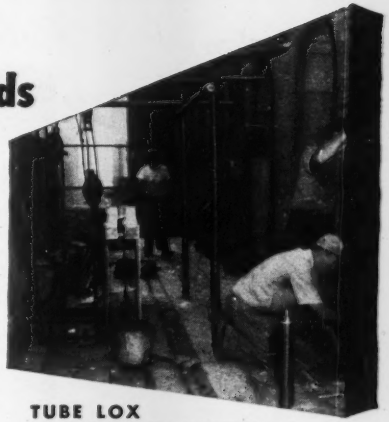

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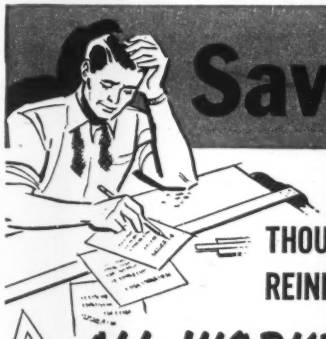

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(Continued from page 78)

▲ **Wash., Richland**—SCHOOLS—School District 400, Richland, plans by J. H. Whitney, Yakima, second high school, $1,514,493 Jefferson Elementary School addn., $875,000 Spalding Elementary School addn., $300,000. CD 4/20/50.

▲ **Man., Winnipeg**—SUPPLY, etc.—Defence Constr. Ltd., 400 Kensington Bldg., supply buildings and barracks for Army Base Development, Fort Osborne Barracks, $5,000,000. K. F. Hurst, c/o owner, engr.

Ont., Kenora—HOME—Kenora District Municipal Assn., G. A. Toole, chn., Kenora, plans by L. Y. McIntosh & Assoc., Radio Hall, Fort William, 100-bed home for aged. $500,000. CD 8/31/50.

▲ **Ont., Kingston**—HOSPITAL—Dpt. P. Wks., Sheppard Ave., Toronto, plans by G. N. Williams, c/o owner, 500-bed present Rockwood Mental Hospital addn. $1,650,000.

▲ **Ont., London**—NURSES RESIDENCE WING—Victoria Hospital Trust, Wm. Loveday chn. Board, plans by J. M. Watt, 343 Richmond St., 70-bed rein.-con., brick nurses residence wing $1,400,000. CD 2/2/45.

COMMERCIAL BUILDINGS

▲ **Ariz., Phoenix**—HOSPITAL—Good Samaritan Hospital, 1033 E. McDowell Rd., plans by Lescher & Mahoney, Title & Trust Bldg., 100-bed hospital wing addn. $1,000,000.

▲ **Calif., Lakewood**—DWELLINGS—Ross W. Cortese, 5436 E. Jullson St., Los Angeles, 650 frame, stucco dwellings in tract at Studebaker and Spring Sts. $8,135,000.

▲ **Conn., Hartford**—HOTEL, etc.—Hotel Bond Co., 338 Asylum St., plans by Kane & Fairchild, 734 Asylum St., 11 story hotel and ramp garage, $1,000,000.

Conn., West Hartford—HOMES—Green Manor Estates, 33 Sequin Rd., single houses, in Norwood Development "The Pines", Mohawk Dr. and Mohegan Dr., $700,000.

Ga., Atlanta—DORMITORY—Emory University, N. Decatur Rd., 6 story Harris Hall Dormitory addn. $650,000.

Ill., Chicago—SCHOOL—St. Nicholas Parish, 2238 W. Rice St., school, $500,000. W. B. Enginering Co., 8 S. Dearborn St., consult. engr.

Ill., Chicago—CHURCH—Church of the Nativity of the Blessed Virgin Mary, 6825 S. Washtenaw St., plans by Jonas Mulokas, 3334 W. 66 Pl., church. $600,000.

▲ **Ind., Evansville**—HOSPITAL—St. Mary's Hospital, Louis Ruthenburg, chn. Bldg. Comm., 173 First Ave., plans by Magulo & Quick, 4008 Delmar Ave., St. Louis, Mo., 5 story, irregular brick, structural steel, rein.-con. hospital $1,600,000. CD 2/23/51.

Ia., Indianola—DORMITORY, etc.—Simpson College Indianola, one men's dormitory and one student union Bldg. $600,000. CD 11/5/43.

▲ **Kan., Wichita**—SHOPPING CENTER—Town & Country Estates Inc., c/o Wheeler-Kelly Hagny Trust Co., 120 S. Market St., shopping center on 25 acre site near Douglas, Woodlawn and Lynwood Sts., $4,000,000.

La., New Orleans—DEPARTMENT STORE—F. W. Woolworth & Co., Woolworth Bldg., New York, N. Y., plans by Jones & Roessle, Maison Blanche Bldg., department store, $500,000.

▲ **N. Y., Baisley Park**—APARTMENT—Subway Realty Corp., c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, Zone 2, 6 story, 174x540 ft. apartment, Sutphin Blvd. south of 123 Ave. $2,772,000.

N. Y., Brooklyn — APARTMENT — Normandy Building Corp., 16 Court St., Zone 2, plans by Cohn & Cohn, 105 Court St., Zone 2, 6 story apartment, 9425-35 Shore Rd. $559,000.

N. Y., Forest Hills—APARTMENT—Rosefan Constr. Corp., c/o M. Perlstein & Son, archts., 67-35 75 St., Middle Village, 6 story apartment, 71 Rd. and 112 St. $900,000.

▲ **N. Y., Shrub Oak**—SEMINARY—Loyola Seminary of Society of Jesus, Shrub Oak, plans by Voorhees,

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Walker, Foley & Smith, 101 Park Ave., New York, Zone 17, seminary bldg. for New York Province of the Society. $5,000,000.

Pa., Erie—STORE—W. T. Grant Co., 130 W. 42 St., New York, N. Y., plans by Meyers, Krider, Werle & Ellenberger, Commerce Bank Bldg., 1 story, bsmnt., 165x165 ft. brick, steel department store. $750,000.

▲ R. I., East Providence—HOUSING—Trail Developers, Inc., c/o Charles Riley, 122 Bridgham St., Providence, plans by De Rose & Cavalieri, 384 E. 149 St., New York, N. Y., housing development, Wompanoag Trail, Kent Gardens. $1,000,000.

Pa., Rochester—HOSPITAL—Rochester General Hospital, Rochester, plans by Arthur L. Martsolf, 512 3rd Ave., New Brighton, top addn. brick, steel, hospital, $710,000. CD 3/16/51.

Tex., Galveston—HOTEL—Jack Tar Court Hotel, North Beach, plans by Thomas M. Price, 819 Broadway, brick, wood frame hotel expansion, 60-rooms, swimming pool, some remodeling existing hotel. $850,000.

▲ Tex., Houston—DWELLINGS—Freeway Development Co., Inc., c/o Lula O. Couch, pres., 5519 Lawndale St., Unit 1 50 cedar shake dwellings, concrete slab fdn., $412,500; Unit 2, 50 frame dwellings, concrete slab fdn. $362,500; Unit 3, 50 masonry dwellings, concrete slab fdn., $435,000; Unit 4, dwellings, $450,000.

▲ Tex., San Antonio—HOUSING—Federal Housing Admin., 610 S. Flores St., construct, manage, finance 340 housing units for Fort Sam Houston, $2,550,000.

▲ Va., Norfolk—SHOPPING CENTER—Tidewater Shopping Center, Inc., c/o H. C. Hofheimer, Jr., 2125 Kimball Terrace, plans by Kahn & Jacobs, 2 Park Ave., New York, N. Y. shopping center, incl. approx. 1,500 stores and parking space for 2,500 automobiles. $4,000,000.

▲ Alta., Edmonton—HOUSING—Westmount Apartments, Ltd., c/o Blakey, Blakey & Ascher, 10042 109 St., housing development, 25 apartment blocks, each 24 suites, 2 story, 40x173 ft., frame, stucco, 25-acre site in St. Albert Trail District. $3,000,000.

Ont., Kitchener—HOUSING—Bradon Title & Constr. Co., 50 Russell St., 93 housing units on Sub-Division behind St. May's Hospital, $885,000.

Ont., Ottawa—SHOPPING CENTRE—J. H. Shankman, Central Chambers, 46 Elgin St., shopping centre shops, offices, parking area, etc., on Carling Ave., $750,000.

▲ Ont., Toronto—OFFICE—Bell Telephone Co. of Canada 76 Adelaide St., plans by Mathers Haldenby, 15 St. Mary St., 7 story, two wings 158x183 ft., rein.-con., stone 157,000 sq. ft., office bldg., University Ave. $4,000,000. CD 3/23/50.

Ont., Toronto—ADMINISTRATION—St. Michael's College, 50 St. Joseph St., plans by E. Corjuier, 3675 Cote des Neiges Rd., Montreal, Que., administration bldg. incl. library, auditorium, student union, etc. $500,000. CD 3/3/48.

▲ Ont., Toronto—HOSPITAL ADDN., etc.—Women's College Hospital, 76 Grenville St., plans by Marani & Morris, 1250 Bay St., one 9 story and one 5 story wing addns., 6 story nurses residence and school, $4,140,000. J. E. Asheton Smith, 163 Wicksteed Ave., assoc. archts. CD 4/21/44.

INDUSTRIAL BUILDINGS

▲ Ariz., Florence—REFINERY—West Coast Pipe Line Co., L. Glasco, pres., M & W Tower Bldg., Dallas, Tex., refinery, $3,000,000; booster station, $400,000. Ebasco Services, Inc., 2 Rector St., New York, N. Y., consult. engr. CD 4/23.

▲ Calif., Stockton—MILL, etc.—Sperry Flour Div., General Mills, Inc., 116 New Montgomery St., San Francisco, mill and warehouse, $1,000,000.

▲ Mass., Boston—PLANT—Westinghouse Electric Corp., Sturtevant Div., Damon St., plant to manufacture air conditioning equip., at Hyde Park, $1,250,000.

▲ Mich, Fruitport—FACTORY—Thompson Products Inc., 1017 Fisher Bldg., Detroit, 1 story, brick, concrete, steel factory, $2,000,000.

O., Cleveland—FACTORY—Industrial Rayon Corp., Union Commerce Bldg., plans by Osborn Eng. Co., archts.-engrs., 7016 Euclid Ave., 1 story, 156x165 ft. brick factory for mfg. cord for tires, adjacent to plant of Cleveland division, at 9801 Walford Ave. $500,000.

Tex., Bryan — PLANT—International Shoe Co., 1059 Washington Ave., St. Louis, Mo., shoe plant. $750,000. Brown & Root, Box 3, Houston, consult. engrs. CD 9/19.

▲ Philippine Islands, Lanao—MILL—National Shipyards & Steel Corp. Manila, steel mill near Maria Christian hydro-electric project. $3,000,000.

▲ Alta., Edmonton—PLANT—William A. Burden & Co., 111 Broadway, New York, N. Y., U. S. A., gas absorption plant, $10,000,000.

▲ Ont., Port Arthur—GRAIN ELEVATOR—Saskatchewan Pool Terminals Ltd., Public Utilities Bldg., Port Arthur rebuilding No. 4A Terminal Grain Elevator. $3,000,000.

UNCLASSIFIED

▲ Arkansas—RURAL DISTRIBUTION LINES—Ozark Rural Electric Co-operative Corp., Fayetteville, rural distr. lines Fayetteville, $1,125,000 Frank Horton & Co., Lamar, Mo., consult. engrs. CD 1/3/49.

▲ Louisiana—GAS PIPE LINE—Gulf Interstate Gas Co., Oil & Gas Bldg., Houston, Tex., 860 mi. gas pipe line main between Louisiana and Kentucky thru states

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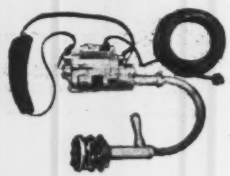

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of Louisiana, Mississippi, Tennessee and Kentucky, $12,887,000, field gas gathering lines del. to main field, Baton Rouge area, $750,000; booster station, Baton Rouge area, $375,000.

Mass., Boston—TELEVISION STATION—E. Anthony & Sons, Inc., 555 Pleasant St., New Bedford, television station, $434,000, Jansky & Bailey, National Press Bldg., Wash., D. C., consult. engrs.

Mass., New Bedford—TELEVISION STATION—E. Anthony & Sons, Inc., 555 Pleasant St., television station, $396,000, Jansky & Bailey, National Press Bldg., Wash., D. C., consult. engrs.

Mass., Worcester—TELEVISION STATION—WTAG, Inc., 18 Franklin St., television station, $417,000, Jansky & Bailey, National Press Bldg., Wash., D. C., consult. engrs.

Mich., Flint—THEATER—W. S. Butterfield Theaters, Inc., National Bank Bldg., Detroit, television theater, $820,000, George P. Adair, 1833 M. St., Wash., D. C., consult. engr.

Mich., Jackson—TELEVISION STATION—WIBM, Inc., 2511 Kibby Rd., television station, $487,000, George C. Davis, Munsey Bldg., Wash., D. C., consult. engr. CD 9/18/44.

Minn., Minneapolis—TELEVISION STATION—Family Broadcasting Corp., 15 N. Ninth St., television station, $333,700, McIntosh & Inglis, Wyatt Bldg., Wash., D. C., consult. engrs.

Minn., St. Paul—TELEVISION STATION—WMIN Broadcasting Co., Inc., 538 Hamm Bldg., television station, $425,000, Jansky & Bailey, National Press Bldg., Wash., D. C., consult. engrs.

Miss., Jackson—TELEVISION STATION—Standard Life Broadcasting Co., Inc., Box 1847, television station, $412,500, Commercial Radio Equipment Co., 1319 F St. N. W., Wash., D. C., consult. engrs.

Missouri—RURAL DISTRIBUTION SYSTEM—Crawford Electric Co-operative, Inc., Bourbon, extens., imprvs. to rural distr. lines, sys., etc., Crawford Co. $785,000.

Mo., Kansas City—TELEVISION STATION—Midland Broadcasting Co., 222 W. 11 St., television station, $611,000, Jansky & Bailey, National Press Bldg., Wash., D. C., consult. engrs. CD 9/5/44.

Mo., St. Louis—TELEVISION STATION—K X O K, Inc., 800 N. 12 Blvd., television station, $533,800, Jansky & Bailey, National Press Bldg., Wash., D. C., consult. engrs.

Mo., Sibley—RECREATIONAL GROUNDS—Jackson Co., Independence, reconstr. Fort Osage recreational grounds, $300,000.

Neb., Omaha—TELEVISION STATION—Herald Corp., 14 and Dodge Sts., television station, $838,000. Jansky & Bailey, Natl. Press Bldg., Wash., D. C., consult. engrs.

Neb., Omaha—TELEVISION STATION—Inland Broadcasting Co., World Insurance Bldg., television station, $343,000. Commercial Radio Equipment Co., 1319 F St., N. W., Wash., D. C., consult. engr.

N. Y., Albany—TELEVISION STATION—Hudson Valley Broadcasting Co., Inc., 204 Washington Ave., television station, $365,000. McIntosh & Inglis, Wyatt Bldg., Wash., D. C., consult. engrs.

N. C., Charlotte—TELEVISION STATION—Broadcasting Co. of the South, 112 S. Tryon St., television station, $663,000. Jansky & Bailey, Natl. Press Bldg., Wash, D. C., consult. engrs.

N. C., Charlottle—TELEVISION STATION—Radio Station WSOC, Inc., Box 2536, television station, $575,000. George C. Davis, Munsey Bldg., Wash, D. C consult. engr.

N. C., Durham—TELEVISION STATION—Durham Broadcasting Enterprises, Inc., Box 2009, television station, $436,000. Craven, Lohnes & Culver, Munsey Bldg., Wash., D. C., consult. engrs.

N. C., Winston-Salem—TELEVISION STATION—Piedmont Publishing Co., 419-21 N. Spruce St., television station, $544,500. Craven, Lohnes & Culver, Munsey Bldg., Wash., D. C., consult. engrs.

N. C., Winston-Salem—TELEVISION STATION—Winston-Salem Broadcasting Co. Inc., 826½ W. Fourth St., television station $412,000. E. C. Page, Bond Bldg., Wash., D. C., consult. engr.

O., Steubenville—TELEVISION STATION—WSTV, Inc., Exchange Realty Bldg., television station, $500,000. George C. Davis, Munsey Bldg., Wash., D. C., consult. engr. CD 8/31/44.

O., Youngstown—TELEVISION STATION—Vindicator Printing Co., (WFMJ), Vindicator, television station, $971,000. James C. McNary, Natl. Press Bldg., Wash., D. C., consult. engr. CD 3/20/52.

Okla., Tulsa—TELEVISION STATION—Southwestern Sales Corp. (KVOO), 423 S. Boston Ave., television station, $476,000. Jansky & Bailey, Natl. Press Bldg., Wash., D. C. consult. engrs.

▲ **Texas, New Mexico, Arizona, California**—OIL PIPE LINE—West Coast Pipe Line Co., L. Glasco, pres., M & W Tower Bldg., Dalias, Tex., 953 mi. 20 in. welded joint crude oil pipe line. Texas, New Mexico, Arizona and California $87,000,000; booster station, at Wink, Tex., $750,000; crude oil gathering lines at Wink, Tex. $250,000. Ebasco Services, Inc., 2 Rector St., New York, N. Y. consult. engr. CD 4/25.

Texas—TELEPHONE LINES—Sherman, Hansford, Hartley, Hutchinson & Moore Counties IT Rural Telephone Corp., Dalhart, 500 mi. telephone distr. lines and outside facilities. $400,000. H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, consult. engrs.

Texas—GAS LINES—Trunkline Gas Co., 2332 W. Holcombe St., Houston, gas-gathering lines, $90,000; addnl. gas booster sub-station, $375,000, in area of Goliad, Goliad Co.

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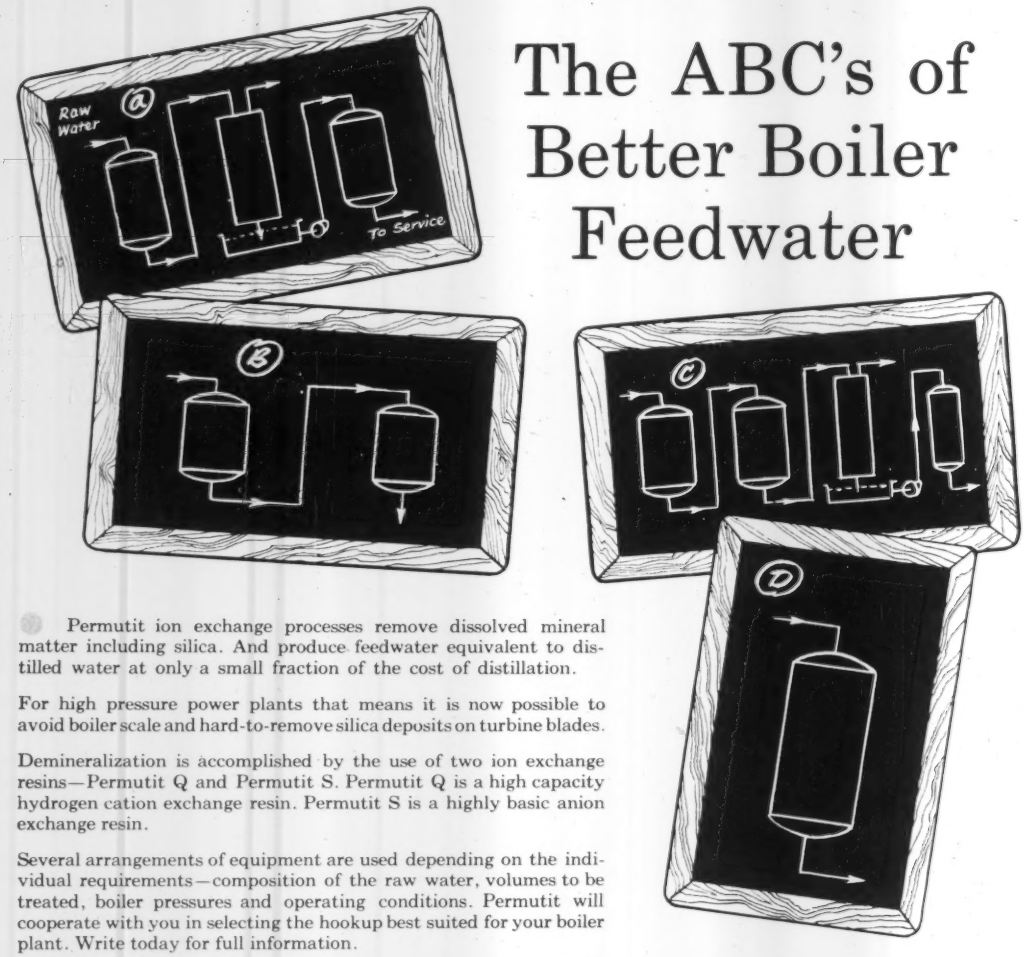

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
October 21, Massachusetts

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Winthrop Estates Homes,** c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica N. Y. Owner Builds. $1,000,000, 128 HOUSES, Long Hill Rd., GROTON CONN.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 28, New Jersey — October 30, New York
STREETS AND ROADS
October 21, Maryland — October 28, New Jersey — October 30, New York

BIDS ASKED—BUILDINGS

▲ **Pa., Morgan**—HOUSING—B.A. 10/24 Allegheny Co. Housing Auth., County Office Bldg., Pittsburgh, twenty 2 story bldgs., 150 families, consisting four 25x84 ft., seven 25x103 ft., four 25x139 ft., and five 26x 85 ft. apartments. $3,000,000. Plans deposit $50. Jos. Hoover, 333 Blvd. of Allies, Pittsburgh, archt. CD 9/20/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Fisher Bros.,** 120-44 Queens Blvd., Kew Gardens, N. Y. Owner Builds. $4,000,000. two 12 story APARTMENTS, Henry Hudson Parkway and W. 242 St., NEW YORK, N. Y. L. M. Rothman, 332 E. 149 St., New York 51, N. Y., archt.

▲ **Joseph E. Heffernan,** Guilford and Rowland Aves. Separate Contracts. $2,000,000. 35 STORES, RESTAURANT and SUPER MARKET, CHELTENHAM, PA. George Daub & Assoc., 2123 Delancey St., Phila., Pa., archts.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 21, Alabama
STREETS AND ROADS
November 21, Alabama

BIDS ASKED—BUILDINGS

▲ **Va., Newport News**—HOUSING—B.A. 10/28—Newport News Redevelopment & Housing Auth., P. O. Box 77, Newport News, 340 masonry dwellings units, Public Housing Community VA 3-5. $3,250,000. Plans deposit $25. Extended date. Williams, Coile & Blanchard, 3415 Virginia Ave., archts. Harrison, Ballard & Allen, 123 E. 77 St., New York 22, N. Y., engrs. CD 9/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **George A. Fuller Co.,** 597 Madison Ave., New York, N. Y. CA, $12,000,000, transformer PLANT, ROME, GA. General Electric Realty Corp., Box 1221, Rome, Ga. Bids Sept. 17. CD 9/4.

▲ **Martin S. Adams & Sons,** Joshua Adams, pres., 512 W. Ormsby Ave., Louisville, Ky. Owner Builds. Approx. $6,720,000. 670 APARTMENT UNITS and SHOPPING CENTER, LOUISVILLE, KY. CD 9/22.

▲ **Johnson & Willard,** 422 W. Front St., Knoxville, Tenn., LB $5,749,000, RESEARCH CENTER and HOSPITAL, KNOXVILLE, TENN. University of Tennessee, Knoxville, Tenn. Bids Oct. 7. CD 9/15.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
October 20, Ohio — October 30, Indiana

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Michigan Sewer Constr. Co.,** 21720 W. Eight Mile Rd., Detroit, Mich. LB $5,333,839, est. $5,000,000. PW 1406, 1407 and 1408, Northwest Interceptor, 18,900 ft. 10 ft. diam. sewer under streets and right of way Rouge River at Bayside Ave., DETROIT, MICH. City, Carl D. Warner, comr. Dpt. P. Wks., Guardian Bldg., Detroit, Mich. Bids Sept. 30. CD 8/20.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Modern Builders, Inc.,** 7911 Reading Rd., Owner Builds. $10,800,000. Six hundred 1½ story, one-family brick HOMES, Daley and Winton Rds. in Brentwood Village, CINCINNATI, O. Cordes & Pressler, 4935 Paddock Rd., Cincinnati, O., and Edward Lipson, Cedar and Lathrop Sts., Cincinnati, O., archts. Ayers & Graf, 527 Linton St., Cincinnati, O. engrs.

▲ **Gibson Bros. Co.,** Warren, O., CA. Approx. $10,000,000. 3,000 ft. frontage Graceland Shoppers Mart, a modern SHOPPING CENTER and 5,000 car parking space in Graceland area between High St. and Olentangy River, north of Rathbone Rd., COLUMBUS, O. Don M. Casto & Son, 42 S. Fourth St., Columbus, O.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
October 21, Iowa — October 21, 23, Kansas

BIDS ASKED—BUILDINGS

▲ **Tex., Dallas**—HOTEL—B.A. 11/15—Statler Hotels, Inc., 7 Ave. and 33 St., New York, N. Y., 900-room hotel. $15,000,000. Holabird, Root & Burgee, 180 N. Wabash St., Chicago, Ill., consult. engrs. CD 9/3.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Adler Constr. Co.,** Loveland, Colo., LB $3,761,115, Pactola Dam on Rapid Creek, near Rapid City, Missouri River Basin Proj., Spec. DC-3783, SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Pennington County Court House, Rapid City, S. D. Bids Sept. 30. CD 9/23.

▲ **Lone Star Gas Co.,** 1915 Wood St., Dallas, Tex., Own Forces. $3,275,000. 70 mi. 20 in. welded joint gas line between area Pauls Valley, OKLAHOMA to Petrolia, TEXAS; $210,000, field gathering gas lines, near Pauls Valley, Okla. CD 10/3.

▲ **R. H. Fulton & Co.,** c/o owner, CA $3,285,000. 77 mi. 20 in. segment of crude line running west from Longview, Gregg Co., TEXAS. Gulf Pipe Line Co., Gulf Bldg., Houston, Tex. CD 11/14/51.

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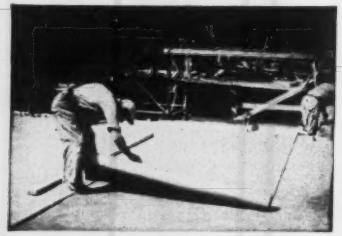

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▲ H. B. Zachry Co., Box 3, Houston, Tex., CA. Approx. $23,855,000, est. $25,943,079, 315 mi. 24 in. gas main from Provident City TEXAS to Castor, LOUISIANA. Texas Eastern Transmission Corp., Texas Eastern Bldg., Shreveport, La. CD 5/7.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Missouri Public Service Co., Ralph J. Green, pres., Warrensburg, Mo. Own Forces. Est. $3,300,000. POWER GENERATING STATION, incl. 27,000 kw. turbo-generator, 200,000 lb. per hr. steam boiler, etc., PLEASANT HILL, MO. CD 5/19.

▲† Utah Constr. Co. and C. H. Leavell & Co., 1900 Wyoming St., El Paso, Tex., CA $4,121,944, Item 1, 60 smokeless powder magazines for Naval Ammunition Contr. NOY 74450, SHUMAKER, ARK. Eighth Naval Dist. Naval Station, New Orleans, La. Bids Sept. 10, awarded Oct. 2. CD 9/18, under LB.

▲† Farnsworth & Chambers, Box 74, Houston, Tex., LB. Item 1, $3,749,874; Item 2, $3,520,584; Item 3, $3,211,948; Item 4, $2,882,944, high explosives and detonator MAGAZINES, U. S. Naval Ammunition Depot, Spec. 34748, SHUMAKER, ARK. Eighth Naval Dist., Naval Station, New Orleans, La. Bids Sept. 26. CD 9/4.

▲† Collum & Whittle Contractors, Box 6044, Dallas, Tex. LB. $3,689,000. construct 54 earth-covered AMMUNITION STORAGE MAGAZINES, NOY 74449, Spec. 24746, McALESTER, OKLA. U. S. Govt., Officer in Charge of Construction, 8th Naval Dist., Bldg. 16, New Orleans, La. Bids Oct. 2. CD 8/27.

▲ Wells-Greenan-Williams & Dunlap, 1100 Main St., Dallas, Tex., CA $3,506,007, construct, manage, fi. Base, LUBBOCK, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Aug. 28. CD 9/9, under LB.

▲ Wixson & Crowe, Inc., Redding, Calif. CA Est. $45,000,000. Aluminum PLANT, Columbia Falls, KALISPELL, MONT. Anaconda Copper Mining Co. 25 Broadway, New York, N. Y. Wilbur Jordan, c/o owner, engr. CD 11/16/51.

▲ M.A.B. Constr. Co., Milby Hotel, Houston, Tex. LB. $3,217,343, general contract construct, manage, finance, HOUSING, 3-bedroom duplexes, 4-bedroom fourplexes LB. $71,135, street constr. hard-type paving; LB. $49,000, water lines, facilities: LB. $81,-115, sanitary-storm sewers; LB. $65,100, outside electric lighting sys.; LB. $64,220, natural gas sys., Holloman Air Force Base, Serial No. Eng. 29-005-53-7, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Sept. 30. CD 9/25.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

October 29, California — November 6, Washington

STREETS AND ROADS

October 29, 30, California

BIDS ASKED—BUILDINGS

▲ Calif., Los Angeles—COMMUNICABLE DISEASES UNIT—B.A. 11/13—Los Angeles Co., Hall of Records, 8 story, rein.-con communicable diseases unit of Los Angeles County Hospital. $4,000,000. Adrian Wilson, 816 W. 5 St., and Paul R. Williams, 3757 Wilshire Blvd., archts. CD 6/11/51, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † Strand & Sons, 3939 University Way, Seattle 5, Wash., LB, $3,355,000, 1 story, 200x407 ft. supply warehouse, 201x209 ft. storage and shop bldg., 201x209 ft. aircraft maintenance hangar and 261x302 ft. aircraft maintenance hangar, Spec. 35601, WHIDBEY ISLAND, WASH. P. Wks. Officer, Thirteenth Naval Dist., 1511 Wheeler St., Seattle, Wash. Bids Oct. 2. CD 9/8.

▲† Guy F. Atkinson Co. & Ostrander Constr. Co., 10 W. Orange Ave S., San Francisco, Calif., LB $14,437,-978, est. $14,707,922, spillway for Dalles Dam, Columbia River, CIVENG 35-066-53-35, OREGON and WASHINGTON. U. S. Eng., Pittock Block, Portland, Ore. Bids Oct. 7. CD 8/13.

▲† Teichert & Sons, Bressi & Bevanda, Inc., Box 397, Baldwin Park, Calif., CA. $3,747,319, San Gabriel River Improvement Whittier Narrows Flood Control Basin, El Monte, CIVENG 04-353-53-5, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Sept. 18, awarded Sept. 29. CD 9/24, under LB.

BUILDINGS

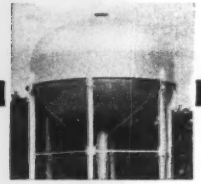
LOW BIDS AND CONTRACTS

▲ Stone & Webster, Russ Bldg., San Francisco, Calif., CA, $4,000,000, synthetic phenol PLANT, RICHMOND, CALIF. Standard Oil Co., 225 Bush St., San Francisco, Calif. Awarded Oct. 4. CD 11/9/51.

FOREIGN

BIDS ASKED—HEAVY CONSTRUCTION

▲ Portugese East Africa—Bids Asked—Government of Portugal, Beira, Portugese East Africa, bridge over Limpopo River (part of irrigation project) Incl. dam and canals. $5,000,000.



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UNIT PRICES

Bascule Bridge, Chicago

A new double-leaf, trunnion, bascule bridge for the city of Chicago, Department of Public Works, to replace the old bridge which spans the river at North Halstead Street, drew seven bids for two contracts totaling $2.5 million. The bidding on the contract for the superstructure was very close with the high bid only 5% higher than the lowest of the three bids. The bids for the substructure contract were much more widely spaced with the highest of the four bids 56% above the lowest.

Minimum wage rates for the project are: carpenters $2.95; bricklayers $3.25; structural ironworkers $2.90; laborers $2.20; and welders $2.80.

The engineer on the project is Stephen J. Michuda, city bridge and viaduct engineer.

Bidders include:

Substructure

1C Kenny Construction Co., Smokie, Ill. $989,250
2 M J. Boyle Co., Chicago, Ill. 1,059,770
4 FitzSimons and Connell Dredge and Dock Co., Chicago, Ill. 1,590,943

Bids: 2-5-52 Items	Unit	Quantity	Unit Prices 1 C	2
Barriers, signs & lights	ls	1	$3,400	$11,150
Rem obstr & reloc opr hses & strwy	ls	1	49,400	54,950
For cofferdams	ls	1	290,650	174,500
Alter, resupt & maintain old bri	ls	1	69,100	64,000
Rock, bldr & msry exc	cy	900	44.00	45.00
General exc	cy	6,700	6.00	15.00
Std p cmt	bbl	6,500	5.00	4.15
Subprs, excl cf cmt & reinf	cf	29,000	2.50	4.15
Drl tst holes in rock under subprs	lf	60	5.00	5.00
C l X conc, excl cmt & reinf	cy	3,300	30.00	38.00
Sewerage work	ls	1	19,800	15,870
Sand fill	cy	62,200	4.00	3.75
Str carbon stl	lbs	600,000	0.20	0.31
Reinf metal	lbs	490,000	0.12	0.095
Cast iron	lbs	1,000	0.40	0.30
Wrought iron	lbs	1,500	0.50	1.50
Drns, sfty treads, elas bmprs, & fishng	ls	1	2,300	2,875
Semi-prmnt pile clumps complete		6	5,500	3,000
Furn untr wood pls	ls	1,000	1.00	1.25
Drvg pls blw cut-off	ls	1,500	0.60	1.50
Yel pine or Doug fir untreated	Mbf	35	300.00	300.00
Creo yel pine or Doug fir	Mbf	3.5	400.00	350.00
Stl sht plng, sp'd or lft in place	lbs	335,000	0.05	0.095
Stl sht plng, for dock walls, in place	lbs	30,000	$0.16	0.13
Semi-perm brick wk	M	3	200.00	200.00
Pre-ht & ext mix conc	cy	2,000	0.80	0.50
Cov and htng conc in place	cy	2,000	2.00	1.00
Hi-early str cmt	bbl	1,000	6.00	4.75
Mechanics' time	hrs	500	3.50	2.00
Laborers' time	hrs	500	2.50	1.50

Superstructure

1C Overland Const Co., Chicago, Ill. $1,657,329
22 Mt. Vernon Bridge Co., Mt. Vernon, Ohio. 1,735,967
3 F. K. Kettler Co., Chicago, Ill. 1,743,706

Bids: 7-21-52 Items	Unit	Quantity	Unit Prices 1 C	2
Barriers, signs, lgts & office	ls	1	$14,000	$16,000
Alter & resupt old bri superstr	ls	1	13,000	15,500
F & d str carb stl	lbs	2,650,000	0.2045	0.205
F & d welded str stl exp jts shapes	lbs	5,500	0.44	0.45
F & d cast stl & bronze	lbs	75,000	0.82	0.85
Erectng mat furn under items 3, 4, & 5	lbs	2,730,500	0.098	0.104
F & p reinf	lbs	45,000	0.168	0.18
Movble leaf rdwy dkng	ls	1	48,985	51,000
Machy, compl as spec	ls	1	425,500	460,000
Std p cmt	bbl	2,200	7.50	7.50
Hi-early-str p cmt	bbl	200	9.00	8.50
Bulk conc cntrwt, excl of cmt	t	1,400	31.00	25.00
Comp-block (275 pd) excl of cmt	t	135	166.00	200.00
Cl X conc abut & pier add fix rdway & sdwlk excl of cmt	cy	1	45,000	40,000
Conc rdwy, wearing-crse, asph men base, exc of cmt	sy	480	11.20	15.50
Conc sdwlk, wearing-crse asph flt base, exc of cmt	sy	240	11.60	22.00
Conc-fld stl grid sdwlk excl of cmt	ls	1	21,650	22,000
Rlngs & alum trp drs	ls	1	25,000	29,500
Creo yel pine wales & bmprs	ls	1	2,200	3,000
Field painting	ls	1	26,000	35,000
R & s old str stl	lbs	105,000	0.033	0.04
R & s all other parts	ls	1	21,000	25,500
Adj & resupt viad to meet new bri grade	ls	1	29,840	30,000
Untr yel pine or doug fir	Mfbm	5,000	$3.55	$4.00
Wrought iron	lbs	1,500	0.75	1.00
Pre-htg & ext mix of conc	cy	200	6.00	8.00
Cov & htg conc inpl	cy	200	10.00	12.00
Mechanics' time	hr	200	6.00	6.50
Laborers' time	hr	300	5.00	5.00

Waterworks Distribution System, Michigan

Construction of a watermain distribution system to be completed in eight months began in Saginaw Township, Michigan, ten days after notification of contract. The job consists of constructing approximately 123,715 linear feet of watermain ranging in size from 4" to 16". All pertinent material is being furnished by the township.

The Francis Engineering Company, Saginaw, Michigan, were the engineers on the project.

Bidders include:

1C Walter B. Warner, Lansing, Mich. $264,375
2 Rudoni Excavating Co., Inc., Lincoln Park, Mich. 302,489
5 A. J. Smith Contr. Co., Inc., Detroit, Mich. 429,799

Bids: 7-7-52 Items	Unit	Quantity	Unit Prices 1 C	2
CIM JP & specs, cl 150, 16"	lf	1,970	$2.50	$2.65
14"	lf	7,860	2.50	2.45
12"	lf	8,195	2.00	2.35
10"	lf	445	2.00	2.30
8"	lf	790	2.50	2.25
6"	lf	2,410	2.00	2.00
4"	lf	425	1.30	1.90
CAP, cl 150, 10"	lf	23,450	1.70	2.25
8"	lf	28,345	1.60	1.75
6"	lf	38,345	1.50	1.40
4"	lf	11,480	1.20	1.20
Hyds, inlet aux GV & box				
6"	ea	140	100.00	95.00
6"	ea	3	100.00	125.00
6"	ea	2	150.00	300.00
4"	ea	16	70.00	85.00
4"	ea	2	80.00	125.00
4"	ea	3	150.00	300.00
Gate valve & boxes, 16"	ea	1	20.00	150.00
14"	ea	3	20.00	150.00
12"	ea	5	10.00	50.00
10"	ea	14	10.00	40.00
8"	ea	29	10.00	25.00
6"	ea	51	10.00	15.00
4"	ea	21	5.00	10.00
Extra CI specials	lbs	100	0.10	0.10
Valve vault const	ls	1	1,000	2,500
Brick manhole	ls	1	500.00	400.00
Cl A conc pvmnt	cy	10	50.00	30.00
Sand backfill for pvmnt	cy	70	3.00	3.50
3" sand cushion	c	1,235	5.00	10.00
¾" corp stops	ea	700	3.00	5.00
1" corp stops	ea	50	3.00	5.00
¾" copper serv pipe	lf	22,300	1.20	1.25
1" copper serv pipe	lf	1,540	1.30	1.25
¾" crb stps & serv box	ea	680	2.00	15.00
1" crb stps & serv box	ea	45	2.00	15.00
¾" corp stps—30" copper gnks	ea	13	20.00	25.00
1" corp stps—30" copper gnks	ea	2	20.00	25.00

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Builder wins first round in claim case

The American Construction Co. last week was awarded $59,000 by the U. S. Court of Claims in a suit against the government.

This decision is a clarification of the rights of contractors under the Lucas Act—the law which permits contractors to press claims against the government arising from work done under the first War Powers Act.

However, the government attorneys will probably take the case to the Supreme Court.

The decision has no connection with the famous Wunderlich ruling last year by the U. S. Supreme Court. In that case, the Supreme Court upset an award granted by the claims court and emphatically reaffirmed its stand that on questions of fact arising from all government contracts, the contracting officer and his department head are the final arbiters.

If the government appeals the American Co. decision, it will ask the Supreme Court to review the refusal of the Court of Claims to recognize two executive orders dealing with administration of the Lucas Act.

• Lucas Act explained—The Lucas Act was passed by Congress in 1946. It permits contractors who had equitable claims against the government arising from the first War Powers Act to get relief after V-J Day. The authority of the various government agencies to grant equitable relief (claims not arising from the contract terms) under the first War Powers Act expired with the end of the war.

Many contractors were unable to get their claims processed by that time. Contractors who had made written requests for relief under the War Powers Act before V-J day could get relief under the Lucas Act.

In administering the act, the President issued two orders: one was that if a claim had been finally passed on by the contracting agency by V-J day, no Lucas relief was available. The other was that no Lucas relief could be granted unless the contracting agency finds relief under the War Powers Act would have been granted, except for the intervention of V-J Day.

The American Construction Co. built the McCloskey General Hospital at Temple, Texas, during the war. At various times during and after construction, the company appealed to the contracting officer and the War Department for relief. While some of the claims rested on alleged breach of contract, the company also implied that it was seeking extra-legal relief as granted under the War Powers Act to further prosecution of the war.

It estimated its net loss in building the hospital at $59,000. Except for two minor claims, no relief was granted. The War Department Appeals Board denied any War Powers relief in 1944.

After the war, the company filed a claim for relief under the Lucas Act with the War Hardship Claims Board. In 1948, that board turned down the company's claim on the basis that no actual War Powers relief was requested before V-J day and that the War Department Appeals Board had denied such relief.

The government asked the Court of Claims to bar recovery by American under the Lucas Act. But the court ruled the executive orders were not within the spirit of the law. It also sustained American's argument that its various claims amounted to a request for War Powers relief before V-J Day.

• 100 contractors seek relief—At the present time, there are about 100 Lucas Act cases filed with the Court of Claims; if the ruling in the American case stands, it will have guiding influence on the court's determination of these cases. And the Wunderlich ruling will have no affect on them.

There have been construction cases decided by the Court of Claims since the Wunderlich decision by the Supreme Court. And contractors have been successful in many of them. The Wunderlich situation is the exception, not the rule.

But another case now on the docket of the court, the John C. Long Construction Co. vs. the United States, raises an interesting sequel to the Wunderlich ruling. The Long company is claiming $116,000 against the government for losses suffered in the construction of two pumping plants at Kansas City, Missouri.

The Long claim is based on mistaken representation by the government of conditions of the soil in which the plants were to be built. Unable to get satisfactory relief from the Corps of Engineers or the Secretary of the Army, the company is in the Court of Claims in a very similar situation to the Wunderlich case.

But the Long company, recognizing the effect of the Wunderlich ruling, is alleging omissions, errors and mistakes so gross as to demonstrate fraud. In other words, it is trying to prove fraud on the part of government in light of the strict Wunderlich rule.

In all there are well over a dozen construction cases now on the docket in the Court of Claims. They involve a total of over $2 million. More of them may involve the Wunderlich ruling, but they probably do not. Lawyers who have handled these construction company claims estimate that of a total of 386 contract claims against the government now pending in court, about 270 are construction cases. Of that number, they estimate less than 10 involve a situation where the Wunderlich ruling can be used by the government against the contractor.

• Wunderlich in reverse—There is even a case pending in which the Wunderlich ruling will work against the government. The department head reversed the decision of the contracting officer and ruled in favor of the contractor.

In another case already decided, the court said that while the usual Article 15 included in government contracts leaves disputes as to facts in the hands of the contracting officer, that article has no affect on questions of the validity or interpretation on the contract. Such questions may be appealed to the Court of Claims.

Beside the type of claims collectable by reasons of the Lucas Act, contractors still can get settlements in the Court of Claims where they can prove losses as a result of delays caused by the government. Examples of such situations are where the government was late in getting approval of plans or where it did not have sites ready for work as specified.

Government lawyers say the bulk of damages sought in the construction cases rest on claims of breach of contract. They say the effect of the Wunderlich rule has been overemphasized, since it does not apply to that kind of claim.

But the Associated General Contractors hopes to reintroduce legislation in the new Congress to eliminate the binding nature of fact determinations by department heads. A measure designed to do that passed the Senate last year, but could not be acted on by the House before Congress was adjourned.

REACH AGREEMENT—A. R. Gallaway, Jr., left, chairman of the California state reclamation board and Brig. Gen. C. H. Chorpening, of Army Engineers, agreed on priority of work to speed completion of Sacramento project.

Expect more funds for flood-control job

Increased federal appropriations can be expected for the Sacramento Valley flood control project as a result of an agreement reached last week by the Army Corps of Engineers and the state of California.

Disagreement between the Corps of Engineers and the state on priority for completion of the project resulted in a sharp cut in federal funds for the work.

In the agreement, the Corps won the main point at issue. In their desire to push work as rapidly as possible, the Army Engineers insisted they should start in the delta region and work upstream. The state, instead, had a long list of work which it wanted done on a priority basis.

Brig. Gen. C. H. Chorpening, Chief of Engineers for Civil Works, who participated in the discussions, indicated that the agreement would satisfy the federal Budget Bureau.

The Budget Bureau had recommended appropriations be kept at a minimum until the Corps and the California Reclamation Board could work out a satisfactory plan for completion of the project.

Congress granted only $1 million for flood-control work on the Sacramento River in the current year's budget.

The state reclamation board, headed by A. R. Gallaway, Jr., hopes the agreement will pave the way for a $5-million to $6-million appropriation for the project in the next fiscal year.

About $19.5 million will be needed from the federal government to finish the project, plus about $15 million from the state.

In the flood-control project are 1,200 miles of levees, many of which are below standard. State and federal engineers agree there are at least 100 spots where emergency work is needed. The Army Engineers plan to repair the most dangerous points while continuing with the work on the main project.

Work to start soon on major airport

The master plan of Kansas City, Mo., for construction of a $23-million industrial airport in Clay County was announced last week by City Manager L. P. Cookingham. Voters recently approved issuance of $23 million in bonds for the program.

The city manager authorized negotiations to start for the purchase of 28 tracts of land for the airport. He said the city hopes to start construction early in the spring.

The master plan includes construction of three runways, all of which will be long enough for the latest jet planes, according to Louis R. Inwood, city aviation director.

First to be constructed will be the north-south runway, 8,000 ft long and 200 ft wide. To meet demands of future aircraft, this runway can be increased to 13,500 ft.

Aviation experts recommended construction of only part of the northwest-southeast runway now, Inwood said. This runway will be 75 ft wide and 6,500 ft long. Ultimate plans call for widening it to 150 ft and lengthening it to 8,000 ft.

The 75-ft width would be sufficient to serve industries, including the Trans World Airlines' overhaul base to be constructed on land fronting U. S. Highway 69, Inwood said.

A second north-south runway will be constructed as the industrial air traffic demands. It will be 200 ft wide and 8,500 ft long.

• **New Jersey field proposed**—Airport news also turned up last week in New Jersey where the state Department of Conservation and Economic Development recommended construction of a major, all-weather air terminal in the central New Jersey pinelands near Lakewood.

Governor Driscoll said that a study showed no obstacles to development of the airport in the Lakewood area. He declined to give an exact location, because of a fear of land speculation.

The study showed that at least three 15,000-ft runways, none of which would require takeoffs or landings over Lakewood, could be built should have been 8%, instead of 5%, on the site under consideration. The site is 60 miles from Philadelphia and 63 miles from New York.

Aluminum producers seek new price rise

The Office of Price Stabilization has been asked by primary aluminum producers to raise the ceiling price on primary aluminum mill products another 3%.

The industry advisory committee told OPS the price increase was needed to offset fully the recent one-cent-a-pound boost approved for primary aluminum pig and ingot and alloy pig.

On Aug. 4, OPS granted a boost of 5% for primary aluminum mill products including sheet, coil, and wire.

Before you plan Foundations
INVESTIGATE
Vibroflotation
Soil Compaction
for
Industrial Foundations
Airports • Highways
Earth Dams • Levees
Deep Foundations
Concrete Dams
Increases load-bearing capacity • reduces costs

Before you plan foundations, find out if Vibroflotation is adaptable to your project. This modern process of granular soil compaction provides high bearing capacity at *substantial savings*... eliminates need for, or increases efficiency of piling and extensive spread-footings... solves problems of settlement under vibratory loads.

V-2 RUST
Write for Bulletin . . .
Important facts for engineers about Vibroflotation.

THE RUST ENGINEERING CO.
RUST BUILDING PITTSBURGH 19, PA.

HOTTEST and CLEANEST

- GREATEST RADIANT HEAT
- LESS CLEANING THAN ANY OTHER SALAMANDER
- NO WICKS, JETS, VALVES OR PRESSURES
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HY-LO
Oil-burning Salamander
SCHEU PRODUCTS COMPANY
274 STOWELL STREET • UPLAND, CALIF.

Bids opened on 2nd phase of The Dalles

A low bid of $14.4 million on second stage construction of the $350-million The Dalles Dam was submitted jointly last week by Guy F. Atkinson Co. and Ostrander Construction Co.

This phase of the multi-purpose project on the Columbia River, near The Dalles, Ore., will include construction of a concrete spillway, gates, excavation for the tailrace and the approach channel. Completion date is set for Dec. 31, 1955.

• **More work in April**—Col. Thomas H. Lipscomb, Portland District Engineer, announced that his office expects to invite bids about Apr. 1 for construction of the powerhouse structure. Cost of that section of the job will be about three times the spillway, he said.

The first part of the eight-year The Dalles construction program, (ENR Dec. 20, 1951, p. 27) including construction of cofferdams and rough excavation for the powerhouse area, is under contract to S. A. Healy Co., of White Plains, N.Y. Completion of this $4.8-million contract is scheduled for August, 1953.

The low bid submitted by Atkinson and Ostrander was under the $14.7 million estimate on the second phase prepared by the district engineers.

The other bidders were: S. H. Healy Co., $14.9 million; Morrison-Knudsen and Peter Kiewit Sons, $15 million; L. E. Dixon & Co., Arundale Corp., Hunkin-Conkey Co. and American Pipe & Construction Co., South Gate, Cal., $16.5 million; Consolidated Builders, Oakland, Calif., $16.7 million; J. A. Jones Co., $16.8 million; and Grafe-Callahan, Floyd Shofner, D. G. Gordon and Guenther-Shirley, Los Angeles, $18 million.

Atkinson and Ostrander, together with J. A. Jones Construction Co., of Seattle, are currently building McNary Dam, under the name of McNary Dam Contractors.

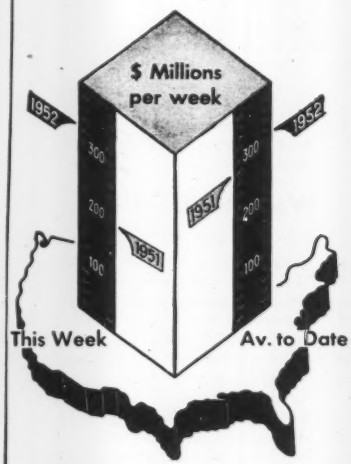
Public works program outlined in Cleveland

Cleveland, Ohio, voters will ballot Nov. 4 on a capital improvements program that would involve issuance of $54 million in bonds.

Included in the public works program are: sewage disposal, $6 million; freeways, $6 million; street openings and widenings, $3.5 million; paving, $3 million; bridges, $1 million; sewers, $7 million; incinerator, $500,000; airport, $6 million; parks, $1.5 million; recreation facilities, $3 million; lake front and shore protection, $2.5 million; zoo, $1 million; city hospital, $3 million; welfare institutions, $1 million; off-street parking, $2 million; and urban redevelopment, $7 million.

Activity This Week

As reported to ENR
(in millions of dollars)



Contracts by type of work

	This Week	Cumulative 42 wks 1952	1951	% chge
Waterworks	$2.0	$178.9	$169.9	+5
Sewerage	4.8	237.3	268.0	−11
Bridges	7.6	322.8	272.2	+19
Highways	12.1	1,231.0	988.6	+25
Earthwork, waterways	21.0	408.6	433.2	−6
Buildings:				
Public	52.4	3,903.8	1,803.2	+116
Housg., pub.	2.5	534.1	574.5	−7
Housg., priv.	51.8	2,455.2	1,571.6	+56
Commercial	38.6	539.6	525.0	+3
Industrial	78.1	2,254.0	3,518.7	−36
Unclassified	62.4	1,099.9	1,437.4	−23
Total	**$333.3**	**$13,165.2**	**$11,562.3**	**+14**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost	Oct.	588.43	282.86	123.27
	Sept.	586.08	281.73	122.86
Bldg. cost	Oct.	424.77	229.62	120.70
	Sept.	424.40	229.42	120.64
Volume	Sept.	441	179	127

OFFICIAL PROPOSALS

Bids: October 28, 1952

Route 4, Sec. 4-E, and Route 17, Secs. 7B & 8D
Route 10, Sec. 8

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON
READVERTISEMENT

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 4, Sec. 4-E, from Hackensack River to Route 17, Closing Island Openings, and Route 17, Sections 7B & 8D, Intersection Revisions at Midland, Linwood and Hollywood Avenues, in municipalities of River Edge, Hackensack, Paramus, Ridgewood and Hohokus, Bergen County, length 2.702 miles,

and

Route 10, Section 8, Revision of Pleasant Valley Way Intersection, Town of West Orange, Essex County, length 0.116 miles.

The principal items of construction are:

Roadway Items

Estimated:
2,260 cu. yds. Roadway Excavation — Earth
799 sq. yds. Pavement Excavation
638 cu. yds. Borrow Excavation
2,200 sq. yds. 10" Plain Concrete Pavement
1,719 sq. yds. Waterbound Macadam Base
1,719 sq. yds. Waterbound Mac. Inter. Course
220 tons Bituminous Conc. Surface Courses
9,253 lin. ft. White Concrete Curb

Electrical Items

3 Underground Structures for Traffic Signal System

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, October 28, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: October 28, 1952

Route 46 (1953), Section 1-A, Bridges

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Construction of six bridges on Route 46 (1953), Section 1-A, Dunnfield to Columbia, Pahaquarry and Knowlton Townships, Warren County, Federal Project FI-155(2). The principal items of construction are:

Estimated:
8,777 cu. yds. Concrete in Structures
880,245 lbs. Reinforcement Steel in Structures

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, October 28, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 23, of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Municipal Building, South Main Street, Phillipsburg, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: October 30, 1952

Construction of Structures, on the Grading, Drainage & Paving of Turnpike Sec. 32A

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania
NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Standard Time), the 30th day of October, 1952, and immediately thereafter will be taken to the New House Caucus Room, 1st floor, Room 140, Main Capitol Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud, for the following contract:

For the construction of structures, and the grading, drainage, and paving of Turnpike Section 32A, part of the Delaware River Pennsylvania Turnpike Extension in Upper Merion Township, Montgomery County, Commonwealth of Pennsylvania, this section being situated as follows:

Beginning at a point 143.79 feet east of the Chester-Montgomery County Line, this line being also the center line of the Turnpike crossing of L. R. 201; said point being at Turnpike Station 107+54.70 in Upper Merion Township, Montgomery County, thence in a easterly direction 9065.30 feet to a point approximately 682.5 feet west of L. R. 143 in Upper Merion Township at Turnpike Station 198+20, Montgomery County, a distance of approximately 1.72 miles.

The approximate quantities of the principal items are as follows:

Class 1 Excavation	468,960 cu. yds.
Class 2 Excavation	13,605 cu. yds.
Borrow Excavation	136,875 cu. yds.
Special Subgrade	126,850 sq. yds.
Reinforced Concrete Pavement	66,580 sq. yds.
Class "A" Concrete	986 cu. yds.
Class "B" Concrete	1,425 cu. yds.

Copies of plans, specifications, and other contract documents, including cross-sections are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on 14 October 1952. Plans, specifications, cross-sections, and other contract documents will not be available before this date for inspection or for mailing to prospective bidders. Copies of specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5) dollars per copy. Copies of cross-sections may be purchased from the Pennsylvania Turnpike Commission for the sum of fifty (50) dollars per set.

Plans and contract documents, for this section, exclusive of cross-sections and specifications may be obtained from the Commission, upon deposit of ten (10) dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans, contract documents, and cross-sections returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
7 October 1952

Bids: November 7, 1952

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL, THIRD TUBE
MANUFACTURE, STORAGE AND DELIVERY OF
BOLTS, NUTS AND WASHERS
CONTRACT LT-160.002

Sealed proposals for the manufacture, storage and delivery of bolts, nuts and washers for the lining of the Third Tube of the Lincoln Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:30 P.M., Friday, November 7, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials, Room 1110, and copies will be furnished upon deposit of $25 per set. Deposit to be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, October 16, 1952

(Continued on next page)

OFFICIAL PROPOSALS

Bids: October 28, 1952

Route S-3 Spur, Section 1

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route S-3 Spur, Section 1, Clifton Avenue Extension, from Allwood Road to VanHouten Avenue, City of Clifton, Passaic County. Length 1.100 miles. The principal items of construction are:

Estimated:
- 32,000 cu. yds. Roadway Excavation
- 13,000 cu. yds. Borrow Excavation
- 13,615 cu. yds. Subbase
- 30,000 sq. yds. 4" Waterbound Mac. Base Course
- 29,400 sq. yds. 4" Waterbound Mac. Inter. Course
- 5,095 tons Bituminous Conc. Pavement Surface
- 3,907 lin. ft. Rein. Conc. Culvert Pipe
- 4,642 lin. ft. Concrete Curbs

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, October 28, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: October 28, 1952

Palisades Interstate Parkway, N. J. Section 2-H

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Palisades Interstate Parkway, New Jersey Section 2-H, from Bayview Avenue to Palisades Avenue; Grading, Bridges and Marginal Roads, in the Borough of Englewood Cliffs, Bergen County, length 1.373 miles. The principal items of construction are:

Roadway Items

Estimated:
- 34,000 cu. yds. Roadway Excavation—Earth
- 25,000 cu. yds. Roadway Excavation—Rock
- 150,000 cu. yds. Borrow Excavation
- 23,864 sq. yds. Waterbound Macadam Base
- 19,469 sq. yds. Mod. Pen. Mac. Inter. Course
- 3,520 tons Bituminous Concrete Surface
- 3,893 lin. ft. Clay Pipe—Sanitary Sewer
- 8,384 lin. ft. Rein. Concrete Culvert Pipe
- 114 Inlets and Manholes
- 4,163 lin. ft. Concrete Curbs

Bridge Items
- 3,682 cu. yds. Concrete in Structure
- 340,460 lbs. Rein. Steel in Structures
- 185,700 lbs. Structural Steel
- 3,500 sq. ft. Ashlar Masonry
- 68 sq. yds. Dimension Masonry

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, October 28, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: October 30, 1952

The Port of New York Authority
Contract 5 and M-170
Repointing Granite Facing
Bayonne Bridge, Port Richmond,
Staten Island, N. Y.

Sealed proposals for furnishing all labor, material, and equipment to Repoint Granite Facing of Main Bridge Abutments at the Bayonne Bridge, Port Richmond, Staten Island, New York, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111-8th Ave., New York 11, until 11:00 A.M. (E.S.T.) Thursday, October 30, 1952, at which time and place, bids will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

The Port of New York Authority
Howard S. Cullman, Chairman
New York, New York

Bids: October 24, 1952

For Sale
Approximately 60 Tons Used Railroad Rail

Located at Newark Airport, Newark, N. J. Consisting of approximately:
- 2745 ft. 130 lb. rail
- 111 ft. 100 lb. rail
- 1 frog, 1 switch—130 lb.
- 2—130 lb. to 100 lb. reducers.

To be sold as is, where is, on a lot basis only. Approximately 1200 ft. still in place to be pulled up by purchaser—balance stacked. Bids due on or before 10 A.M. Fri., Oct. 24, 1952.

For details and bid papers write or phone THE PORT OF NEW YORK AUTHORITY Dept. of Purchase & Administrative Services 111-8th Ave., New York 11, N. Y. AL 5-1000, Ext. 206.

Bids: November 6, 1952

Reinforced Concrete Approach

NOTICE TO CONTRACTORS
Washington State Highway Commission
Department of Highways
Olympia, Washington
October 1, 1952

Sealed bids will be received by the Washington State Highway Commission at Olympia, Washington, on Thursday, November 6, 1952, until 10:00 A.M., for the construction of the following improvements and will then and there be opened and publicly read:

1. Constructing a Vertical Lift Steel Bridge with Steel Trusses and Reinforced Concrete Approach Spans on Primary State Highway No. 1 in Snohomish County, SNOHOMISH RIVER BRIDGE, a State Project, involving about 13,860 cubic yards of Structure Excavation, 13,014 cubic yards of Concrete, 1,544,000 pounds of Steel Reinforcing Bars, 2,582,000 pounds of Structural Steel, 28,000 pounds of Cast Steel, 110,000 pounds of Machinery, a Lump Sum for Mechanical and Electrical Equipment, 80,000 linear feet of Untreated Timber Piling, 1,000 linear feet of Treated Timber Piling, 20.3 M.B.M. of Treated Timber and Lumber and Other Items.

All bid proposals shall be accompanied by a bid proposal deposit in cash, certified check, cashier's check or surety bond in an amount equal to five per cent (5%) of the amount of such bid proposal. Should the successful bidder fail to enter into such contract and furnish a satisfactory performance bond within the time stated in the specifications, the bid proposal deposit shall be forfeited to the State of Washington.

Prequalification of bidders is required. Maps, plans and specifications may be obtained from this office upon written request therefor and payment to the Director of Highways by cash, certified check, cashier's check or money order the sum of Two Dollars ($2.00) for each copy of such maps, plans and specifications as a rental for the use of them. Plans will be forwarded by Third Class Mail.

Informational copies of maps, plans and specifications are on file in the office of the County Engineer of the County in which the work is situated, the Chapter Offices of the Associated General Contractors of America in Seattle, Spokane, Tacoma, and Portland and the offices of the District Engineers of the Department of Highways where they may be inspected.

FRED G. REDMON, Chairman
W. A. BUGGE, Director of Highways

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING, D. C., October 1952. SEALED PROPOSALS will be received in Room 429, District Building, 14th and E Streets, N. W., Washington 4, D. C., until 2:00 P.M., October 27, 1952, EASTERN STANDARD TIME, and then publicly opened and read for Construction of ROCK CREEK MAIN INTERCEPTOR, RELIEF SEWER, along Beach Drive in Rock Creek Park, Military Road to Pinehurst Stream, Washington, D. C., consisting of approximately 5,250 linear feet 5'0" diameter Brick and Concrete Sewer. Proposal forms, drawings and specifications may be obtained from the Chief Clerk, Engineer Department (Secretary, Contract Board, D. C.), Room 427, District Building, upon the deposit of a certified check, made payable to the Collector of Taxes, D. C., in the amount of FIFTY DOLLARS ($50.00), for each set.

SEALED PROPOSALS FOR THE PURCHASE OF NEW, UNUSED, EXCESS MATERIALS BEING OFFERED FOR SALE BY PANAMA CANAL COMPANY will be received by Superintendent of Storehouses, Panama Canal Company, Balboa, C. Z., until 10:30 A.M. November 14th on Circular #24, part I; November 18th on Circular #24, part II (Refrigeration equipment parts; plumbing supplies); November 21st on Circular #25, part I (Chevrolet parts); November 25th on Circular #25, part II, (Diamond "T", Dodge, Plymouth parts); November 28th on Circular #25, part III (Ford, autocar parts); December 2nd on Circular #25, part IV (Intl. Truck parts, Gar Wood load packing truck parts, carburetors). Blanks and information relative to these offerings may be obtained from Panama Canal Company, 24 State St., New York, N. Y.

OFFICIAL PROPOSALS

Bids: October 30, 1952.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2 , Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 30th day of October 1952, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the projects listed below.

DISTRICT No. 1

G. L. NICKERSON, District Engineer, 353 Broadway, Albany, New York

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
Albany	FARC 52-90 FASH 52-13	Loudonville-Menands, S. H. 1879 Menands-Troy Bridge Proj. U-1105(1)	1.67	9" Cem. Conc. Pavt. 48' Wide = 1.16 Mi. Asp. Conc. Ty. 1A, Opt. = 0.51 Mi. R. R. Sep. Alpha I-Beam 165'	$54,000 Plans $15	$989,000
Greene	C. T. 52-7 S. T. 52-25 R. C. 52-105	New York State Thruway-Catskill Section-Sub. 6 (Greene Co. L.-Rte. 9W); Coxsackie-Ravena Pt. 1 S. H.5198; New Baltimore Station-Coeymans, S. H. 1348; 5 Access Roads to S. H. 1348 and S. H. 5198	6.06 Thwy. 2.20 Acc.	9" Cem. Conc. Pavt. 2 @ 25' & Var. Wide = 6.49 Mi. Asp. Conc. Ty. 1A, Opt. = 1.03 M. Gravel (Cal. Ch. Treat.) = 0.74 Mi. Hy. Sep. 4 Sp. Alpha I-Beam 301.92' Hy. Sep. 4 Sp. Alpha I-Beam 368.5' Hy. Sep. Fig. Frame 31' Alpha I-Beam Bridge 62' R. R. Sep. 3 Sp. Alpha I-Beam 286'	$290,000 Plans $50	5,220,000

DISTRICT No. 2

LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, New York

Oneida	M. T. 52-12 S. T. 52-26 R. C. 52-106	New York State Thwy. Mohawk Section-Subd. 6 & 7 (Lowell-Whitesboro) Various County & Town Roads; Kirkland-Rome S. H. 8246	11.05 Thwy. 2.68 Acc.	9" Cem. Conc. Pavt. 2 @ 25' & Var. Wide = 11.23 Mi. Asp. Conc. Ty. 1A, Opt. = 2.08 Mi. F. C. Gravel = 0.42 Mi. Interchange 4 Sp. Alpha I-Beam 205.4' Hy. Sep. 4 Sp. Alpha I-Beam 225.1' Hy. Sep. 4 Sp. Alpha I-Beam 226' R. R. Sep. 3 Sp. Alpha I-Beam 234' Hy. Sp. 4 Sp. Alpha I-Beam 224.7' 4 Sp. Alpha I-Beam Br. 241.9' Hy. Sep. 4 Sp. Alpha I-Beam 202.2'	$350,000 Plans $100	6,433,000
Madison & Oneida	M. T. 52-14 M.T.C. 52-15 S.T.C. 52-27 R. C. 52-108	New York State Thwy. Mohawk Section-Sub. 3 & 4 (Canastota-Verona Station); City of Oneida; North-South Artery; Oneida-South Bay Pt. 1 S. H. 1110; Oneida-Verona S. H. 5558; Verona-Rome S. H. 5521	5.00 Thy. 4.10 Acc.	9" Cem. Conc. Pav. 2 @ 25' & Var.= 7.51 Mi. Asp. Conc. Ty. 1A, Opt.= 0.70 Mi. Graded Gravel B. D. S. T.= 0.03 Mi. Misc. Work = 0.86 Mi. Hy. Sep. 4 Sp. Alpha I-Beam 203' Hy. Sep. 4 Sp. Alpha I-Beam 198' Hy. Sep. 4 Sp. Alpha I-Beam 224.2' R. R. Sep. 3 Sp. Alpha I-Beam 282'	$230,000 Plans $100	4,042,000

DISTRICT No. 3

WILLIAM ROBINSON, District Engineer, Weight Lock Bldg., Syracuse, New York

Onondaga	O. T. 52-16 M. T. 52-11	New York State Thruway Ontario Section-Sub 8A (Rte. 370-Brewerton Rd.) Mohawk Section-Sub 8B (Brewerton Rd.-Madison Co. L.)	6.82	Chain Link & Cattle Fencing	$1,800 Plans $10	32,000
Tompkins	FARC52-100	Dryden-Harford S. H. 8016 Proj. S-63(2)	0.30	8" Cem. Conc. Pavt. 22' Wide = 0.22 Mi. Asp. Conc. Ty. 1A, Opt. = 0.08 Mi. 2 I-Beam Brs. 60' & 30'	$9,000 Plans $10	154,000

DISTRICT No. 4

J. P. LARSEN, District Engineer, Barge Canal Terminal, Rochester, New York

Wyoming	FASSH52-15 FASSH52-16P FARC52-101	Persons Corners-Bennington Pts. 2 & 1 Cowlesville-Bennington S. H. 9041 Proj. S-290(2)	1.43	Asp. Conc. Ty. 1A, Opt. = 0.13 Mi. Bit. Mac. Rd. Mix. = 1.30 Mi. 50' I-Beam Br. 25' x 16' Closed Box Br. Hy. Sep. 3 Sp. I-Beam 122.5'	$27,000 Plans $25	482,000

DISTRICT No. 5

C. R. WATERS, District Engineer, 65 Court St., Buffalo, New York

Erie	O. T. 52-15 S. T. 52-24 R. C. 52-104	New York State Thruway Ontario Section-Sub. 12 (Cleveland Drive-Union Rd.) Interchange to Main St. Connection; Wehrle Drive; Forest Rd.; Union Rd.; S. H. 9215	1.11 Thwy. 4.64 Acc.	Two Course Cem. Conc. Pavt. 2 @ 25' Wide = 3.87 Mi. Asp. Conc. Ty. 1A, Opt. = 0.31 Mi. Bit. Mac. Ty. 1 = 0.56 Mi. Grade Gravel Bit. Treat. = 0.35 Mi. Misc. Work = 0.66 Mi. Interch. 3 Sp. Alpha I-Beam 144' Interch. 4 Sp. Alpha I-Beam 266.8' Interch. 4 Sp. Alpha I-Beam 327' Hy. Sep. 4 Sp. Alpha I-Beam 195.83' Hy. Sep. 4 Sp. Alpha I-Beam 277.83' Hy. Sep. 4 Sp. Alpha I-Beam 255'	$148,000 Plans $50	2,697,000
Erie	FASS 52-13	Walden Ave.-Ellicott Rd. C. R. 318 Proj. S-380(1)	2.93	Asp. Conc. Ty. 1A, Opt.	$27,000 Plans $15	504,000

DISTRICT No. 8

J. S. BIXBY, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York

Westchester	R. C. 52-103	Removal of Trees in Westchester County		Removal of 113 Trees	$550 Plans $10	10,000
Westchester & Bronx	FABRP 52-1 FACCP 52-1	Bronx River Parkway (Lower Sect. Pt. 1 & 2) Cross County Pkwy. Proj. U-979(13); U-1008(2)	2.89	8" Cem. Conc. Pavt. Var. Wide Hy. Sep. 2 Sp. Alpha I-Beam 85.64' Alpha I-Beam Br. 54.5' 2 I-Beam Foot Brs. 50' Each Hy. Sep. 3 Sp. Alpha I-Beam 149.4' Hy Sep. 2 Sp. Alpha I-Beam 92.5' Widen Exist. 80.34' Hy. Sep.	$250,000 Plans $100	4,726,000

OFFICIAL PROPOSALS

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders". When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: November 6, 1952

Construction of Concrete Trestle Sections

Sealed bids for furnishing all labor and materials and performing all work for the construction of concrete trestle sections, requiring 41,380 C.Y. foundation excavation, 252,320 L.F. timber foundation piles, 26,000 L.F. steel shell foundation piles, 20,876 yards of concrete and 45,000 cwt. of reinforcing steel for the high level crossing of the New Orleans, Texas & Mexico Railway over the West Atchafalaya Floodway between Cortableau and Krotz Springs, St. Landry Parish, Louisiana, will be received by F. S. Schwinn, Assistant Chief Engineer of the N.O.T. & M. Railway, 204 Union Station, Houston, Texas, until 10 A.M., Eastern Standard Time, November 6, 1952, and then publicly opened. Further information upon application to F. S. Schwinn, Assistant Chief Engineer.

October 10, 11, 12 and 13.
November 4 and 5, 1952.

U. S. Government

Department of Commerce, Bureau of Public Roads, October 6, 1952. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., NOVEMBER 6, 1952, for Project 1A6, Baltimore-Washington Parkway, District of Columbia and Prince Georges County, Maryland. Bridge over Anacostia River. Steel Girder Spans on Concrete Piers and Abutments with Stone Facing, Untreated Timber Piling and other work. Length of Project: 0.101 mile. The approximate quantities of the more important items are: 9,000 cu. yd. Excavation for Structures, 10,000 cu. yd. Cement Concrete, 1,100,000 lb. Reinforcing Steel, 1,773,000 lb. Structural Steel and 480 cu. yd. Stone Masonry. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.

OFFICIAL PROPOSAL

RATE: $1.50 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

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$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.50 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

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The advertising rate is $17.10 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS Address New York City Office, 330 W. 42nd St., N. Y. 36, for October 30th issue closing October 20th.

COST
Accountants—Engineers

Must be experienced in construction costs, and willing to re-locate on project basis with nationally known industrial building firm.

Excellent opportunity offering good starting salary to qualified energetic applicants.

Submit complete record of background, stating availability date and salary requirement.

P-5550, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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Caterpillar Tractor Co., Peoria, Illinois, has responsible positions open for field representatives to live and serve in continental United States. Knowledge of time study and techniques important. Experience with track-type tractors, wheel-type tractors or tractor-mounted shovels essential. Civil engineer graduate preferred. Send full particulars of experience and education to Mr. R. D. Evans, Sales Development Division,

CATERPILLAR TRACTOR Co.
Peoria 8, Illinois

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Construction equipment—middlewest territory with headquarters in Chicago. Prefer graduate engineer with C.E. or M.E. degree. Age 32 to 36. With construction and sales experience. Real opportunity for future advancement with nationally known and well established company. Give full details in first letter including minimum starting salary. Interview will be arranged if qualifications are satisfactory. Our sales force has been advised of this ad.

SW-5675, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ARCHITECTURAL SPECIFICATION writer, assistant, with knowledge of construction trades and building materials, for large Detroit office. Experienced man preferred, but will train architectural or civil graduate with proven writing aptitude. Long term employment with nationally known architects and engineers. Salary $5000-$6500 to start depending upon experience and education. Send resume of above, with data available. P-4976, Engineering News-Record.

ESTIMATOR FOR established heavy construction contracting firm in New Jersey. Will be required to take off and price concrete structures, piping, excavation, structural steel, etc. Write stating qualifications, experience and salary requirements. P-5634, Engineering News-Record.

EXPERIENCED MAN for quantity survey work in building contractors office. Graduate civil or architectural engineer accurate, aggressive individual. Reply by mail, telephone or in person, giving qualifications, availability and salary requirements. Replies will be held confidential if requested. J. H. Findorff & Son Inc., 601 W. Wilson Street, Madison, Wisconsin.

EXPERIENCED MAN for structural steel detailing, checking, or estimating. Send name, address, and list of qualifications to: Fabricated Steel Products of Indiana, Inc., 2025 South Main Street, South Bend 14, Ind.

SEWERAGE ENGINEER—Wanted by City of Allentown, Pa. College graduate preferred with at least 5 years experience in design and construction. Address letters of application stating qualifications, experience and salary desired to E. W. Meckley, City Engineer, Allentown, Pa.

SUPERINTENDENT WANTED for multiple story office building. Give complete experience resume, age and salary expected. P-5630, Engineering News-Record.

WANTED: MECHANICAL Engineer, age 35 to 45, should have had at least ten years experience in material handling, preferably in hoisting equipment field. Also, should have supervisory ability. Write full qualifications and salary requirements. P-5660, Engineering News-Record.

CIVIL ENGINEER, young graduate with 1-3 years experience. Work would consist of surveying, establishing finished elevations of roads, foundations, sewers, etc., establish building lines, develop plot plans, and make field sketches. Excellent opportunity for the right man. Salary open. J. T. Baker Chemical Co., Phillipsburg, N. J.

SALES ENGINEER—We need Engineers with concrete or concrete construction experience who would rather deal with people than drawing boards or "T" squares. Must have sales ability and potential to advance to district manager. Limited travel, location New York, Chicago, Montreal and possibly other cities. Sika Chemical Corporation, Passaic, New Jersey.

STRUCTURAL STEEL Detail Draftsmen and Checkers. All types of Structures. Vacation, group insurance, good working conditions, top rates. Only top quality men. Send complete written information. Bristol Steel and Iron Works, Inc., Bristol, Virginia-Tennessee.

WANTED: SUPERINTENDENT or Estimator with experience in underground utility construction—electric and telephone conduits, gas mains, manholes, etc. Permanent position with long established New England contractor. Write P-5361, Engineering News-Record.

(Continued on opposite page)

SR. FIELD ENGINEERS
CIVIL ELECTRICAL

Graduate civil or electrical engineers with responsible field experience on steam power plants or related large industrial projects. Must be experienced in directing the civil-structural or electrical phase of a large construction project.

Please write immediately giving complete qualifications.

BECHTEL CORPORATION
220 Bush Street San Francisco, California

WANTED

DECEMBER 1ST FOR 3 MONTH MINIMUM FOREIGN ASSIGNMENT:

1 party chief
1 transit man
1 level man
1 plane table man
1 chief draftsman

Highway location in rough terrain — Prefer group who have worked on similar projects. Write with full particulars and salary requirements — To:

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CONSTRUCTION AGGREGATES Corp.
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Civil Engineers

Experienced on Contract Work
Excavation, Paving, Structures

Permanent; with established NY Consulting Engineering firm

Attractive Salary

Send Complete resume, Confidential

P-5672, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

An Alert Mechanical Engineer with Some Knowledge of Electrical Engineering . . . Must Be a Good Calculator . . .

PHILIPS & DAVIES, INC.
KENTON, OHIO

EXPERIENCED HIGHWAY DRAFTSMEN, COMPUTERS, DESIGNERS AND DRAINAGE ENGINEERS

For work on New Jersey Garden State Parkway. Salary open. Apply F. E. Harley & Associates, P. O. Box 113, Route #34, 1¼ miles south of Main Street, Matawan, New Jersey.
Matawan 1-3366 or Matawan 1-3369

CONSTRUCTION SUPERINTENDENTS & ENGINEERS

Large chemical company requires construction superintendent and engineers for regular full time positions in central and eastern U. S. location. Chemical plant experience beneficial. Must be willing to travel. Full details of experience, age, salary expected, and when available for work, must be given in first letter. Write Box ENR 744, 221 W. 41 St., N. Y.

PROJECT MANAGER

To take charge of large South American engineering and construction project of long duration.
Must have past record of accomplishment as capable organizer and time conscious driver of major projects involving process and chemical industries, housing, water, sewer, electric, roads and railroads, terminals, wharves, etc. Spanish language capabilities desirable. Only applicants sending well prepared and all embracive particulars of past experience, education, personal, and past earnings will be considered.

P-5661, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED
Assembly Yard Superintendent

Fully experienced on shop and yard assembly of structural steel fabrication for all types of bridges.

Excellent opportunity for man of experience—attractive salary and bonus.

P-5502, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

DESIGNERS AND DRAFTSMEN

Mechanical; Structural; Electrical; Architectural

For work in our Atlanta office on chemical plants, warehouses, and public buildings.

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In Salary Brackets $5,200—$50,000
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Please write briefly, outlining your specific experience or personnel needs.

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STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-first year. Write today.
WILSON Engineering Corp.
College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

(Continued from opposite page)

SELLING OPPORTUNITY OFFERED

SALES ENGINEER. College Graduate, familiar with road building work to sell crushed stone, asphalt and black top to State Contractors and Highway Officials. Must be sober, industrious, and over 25 years of age. Good Salary. SW-5573, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

CIVIL ENGINEER: Resident or Contractor's Engineer, immediately available. Construction and layout of airports, highways, drainage, grading, paving. Inspection and field plan adjustments. Diversified engineering experience about 40 years includes responsible supervisory U. S. and foreign assignments. Reg. P.E., N.Y. Willing to travel. Excellent references. PW-5241, Engineering News-Record.

CIVIL ENGINEER, 30, French, expected arrive U.S.A. Nov.; Graduate State Public Works School. Eight years experience design, supervision, buildings, sewerage systems, bridges, etc. Would accept Draftsman's job to start, anywhere in U.S.A. PW-5593, Engineering News-Record.

C.E. GRADUATE, 32, married, mechanical background, 2½ yrs. with public utility, survey and stress calculations, some reinforced concrete design. Does office or limited field work. PW-5650, Engineering News-Record.

CHIEF STRUCTURAL Engineer. 17 years field and office experience (domestic and foreign). At present in charge of highway bridge design department. Young aggressive, efficient organizer. Languages. Available for responsible position only, goes West Coast, Overseas. PW-5663, Engineering News-Record.

CIVIL ENGINEER graduate, presently employed, age 52, 2 years successful experience in commercial and industrial reinforced concrete construction as Area Supt., estimator, project manager, etc. Interested only in permanent connection. PW-5671, Engineering News-Record.

CONSTRUCTION ENGINEER would like to manage branch office for large contract firm, or comparable position. Heavy in estimating and field supervision. Present salary, low five figures. Age 36. PW-5518, Engineering News-Record.

CONSTRUCTION MANAGER or Projects Manager available December 1st. Over 25 years diversified experience as Construction Manager and Projects Manager on foreign and domestic work. Outstanding record on reorganizations of delayed projects and in over-all management, coordination and supervision number of simultaneous jobs and all depts. of jobs. Highest references. PW-5586, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, age 35, experience includes both domestic and foreign work, minimum salary requirement $10,000. PW-5570, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT: Concrete Pipe manufacturer. Experienced-machine and cast methods. PW-5555, Engineering News-Record.

CONSTRUCTION SUPT. or Project Manager. Sober, Qualified, Reliable. Available for project in Florida or West Indies. Prefer complicated monumental project but location and salary important. PW-5532, Engineering News-Record.

DESIGNER, PRESSURE Vessels, Process Piping, Concrete, Steel and Sales Engineering. Twenty years experience, now employed, desires outside work, no objection to traveling. PW-5651, Engineering News-Record.

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EARTHWORK CONSTRUCTION Engineer, C.E. graduate. Broad experience in cutterhead Hydraulic suction dredging; dragline embankment, excavation; hauling. Thoroughly familiar with Government contracts and specifications. PW-5629, Engineering News-Record.

ENERGETIC CIVIL Engineer—Graduate, age 30, married. Ten years in general construction. Foreign and domestic experience in cost estimating, bidding, planning, over-all coordination, design revision and modification for bridges, roads, railroads, industrial buildings, power distribution stations and airfields. General supervision and administration. Desires responsible position; Available December 1952. P. O. Box 35, Galesburg, Michigan.

EXECUTIVE ENGINEER, long experience, management large company, heavy construction docks, foundations, tunnels, difficult subaqueous structures, etc. PW-5428, Engineering News-Record.

GENERAL SUPERINTENDENT—16 years experience heavy industrial, commercial and public buildings. Age 38. C.E. degree. Presently employed desires change. Location East Coast, N.Y. area preferred. Salary $12,000. Have experience as general Supt., General manager, Supt. and estimator. PW-5644, Engineering News-Record.

PROJECT MANAGER—Project Engineer and complete staff available for heavy construction, hydro and steam power plants, chemical plants, industrial buildings, tunnels, river or ocean terminal facilities, and dams. Thoroughly experienced in construction, personnel procurement, and training, labor relations, contract negotiations, contractor relationship, and proper coordination of field activity to produce best results at lowest costs. In position to staff job including Construction Supt., Const. Engineers, Cost Accountants, Field Expeditors, and Job Checkup Engineers. Complete Details and resume of all personnel available upon request. PW-5657, Engineering News-Record.

PURCHASING AGENT 8 years responsible experience with CPFF contracts, directing and supervising Buyers, Expeditors, and Traffic Depts. desires position. Available immediately. Just completed contract. Reply PW-5562, Engineering News-Record.

WANTED—POSITION as structural draftsman or structural designer or both. Eight years of experience. Also four years of experience map drafting, one year survey party chief. Licensed civil engineer in North Carolina. PW-5631, Engineering News-Record.

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Civil Engineer—

Reinforced concrete and structural steel designing and detailing experience, registered Minn. engineer, desires contact practicing architect, wishing establish business partnership preferably in N.W. States. BO-5666, Engineering News-Record.

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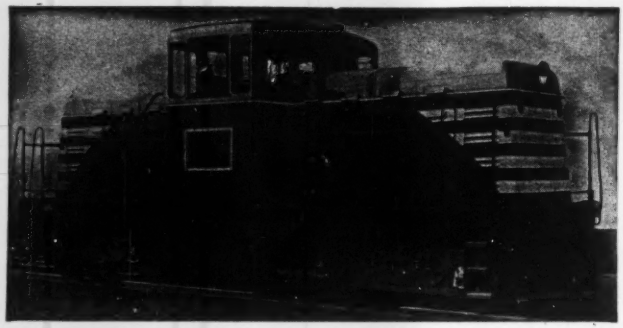

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STEEL

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STONE SPREADER

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Primary unit model 150 PRL 24x36 jaw
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Model 3500 — crane or dragline — 80 ft. boom — manual swing — 20' or 30' jibs — 60 ton lifting capacity — or 2¼ c.y. drag bucket.

Model 2000-B — crane or dragline — 60 ft. boom — manual controls — 20' jib — 25 ton lifting capacity — or 1¼ c.y. drag bucket.

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New Wire Rope Blocks

12" Snatch Blocks with Hooks	$13.50
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18" Single 20 Ton with S. Shackle	25.00
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ABERTHAW COMPANY
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1—#6 Northwest shovel dragline combination
3—Backdump Euclids, model UD
1—2 cu. yds. model 82 Lorain dragline
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1—Grace asphalt booster
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2—24 x 16 Pioneer roll crushers
3—4 cylinder air cooled Wisconsin motors
6—5 KW International light plants
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1—2 cu. yd. clam bucket

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New Model 3500 Speederane, dragline, clamshell and lifterane, 60-ton capacity.
New Ingersoll Rand 600' Gyro-Flo Air Compressor.
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Marion 392 and Koehring 803 dragline, clamshell, lift crane and pile driver combinations.
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4—Sets 22 Foot inside barrel forms.
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Reconditioned and Guaranteed
Model T-15
15 Ton Motor Crane
Immediate Delivery

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Excellent Condition

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1—P & H Model 700 Crawler mounted Crane, 1½ yd. capacity. Gas power. Good all-around condition.

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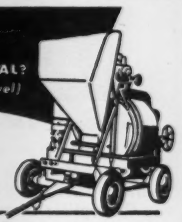

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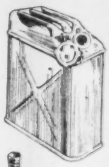

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SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

(Continued from page 93)

Pennsylvania Department of Highways, Harrisburg, Pennsylvania. Sealed proposals will be received at the office of the Secretary of Highways, Room 506, North Office Building, State Capitol, until 11:00 a.m., eastern standard time, October 31, 1952, when bids will be publicly opened and scheduled and contract awarded as soon thereafter as possible for the construction of a steel arch and I-beam bridge having a total overall length of 425 feet and approximately 1843 linear feet of crushed aggregate base with bituminous surface 22 feet and variable in width and 554 linear feet of grading and drainage. Sullivan County (New York), Tusten Town, Wayne County (Pennsylvania), Damascus Township, L.R. 335(4), T.R.106. Bidding blanks and specifications may be obtained free; a charge of $7.50 a set is made for construction drawings and a charge for cross sections will be $5.00. Both may be obtained upon application to the Pennsylvania Department of Highways, Harrisburg. A refund for drawings or cross sections returned will not be made. They may be seen at the offices of the Pennsylvania Department of Highways, Harrisburg; Pennsylvania Company Bank Building, 7 East Lancaster Avenue, Ardmore; Wabash Building, Liberty Avenue and Ferry Street, Pittsburgh; Wyoming Avenue and Ash Street, Scranton, Pennsylvania and 71 Frederick Street, Binghamton, New York; State Office Building, Albany, New York; State Office Building, 270 Broadway, New York City, New York. E. L. Schmidt, Secretary of Highways.

Bids: October 28, 1952

PUMPS, ELECTRIC MOTORS, ETC.
CONTRACT 413

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, October 28, 1952, for Contract 413, for furnishing, testing and delivering deep well turbine pumps and deep well plunger pumps, electric motors and appurtenances for the Neversink intake chamber, the Downsville release water chamber and the intake and outlet chambers of the East Delaware tunnel, of the Delaware system, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of four thousand dollars ($4,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawing, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: October 21, 1952

The Imperial-Compton Project

PUBLIC HOUSING
BID DATE POSTPONED

(Imperial-Compton Project, Cal 4-13)

The Housing Authority of the City of Los Angeles, California, has extended the bid opening date, for the Imperial-Compton Project, Cal 4-13, from October 7th, 1952, to OCTOBER 21, 1952, and will include in the proposal the construction of a Community Building and other additions to the scope of the work. Plans and Specifications for the Community Building are now available.

U. S. Government

BIDS FOR REPLATING STEEL BARGES —Memphis District, Corps of Engineers, U. S. Army, P. O. Box 97, Memphis 1, Tenn. Sealed bids will be received until 11:00 a.m., C.S.T., 21 October 1952, and then publicly opened for replating ten steel material barges. Information on request.

COMMENT
from the
BUTLER ENGINEER

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They don't use timber today to shore-up mine tunnels — ("drifts" to the initiated.) Concrete linings are what the well-dressed mines will wear; concrete mixed by Butler Plants, of course.

Here's the story: Cleveland Cliffs Mine Co. is rehabilitating old copper and iron mines in the north Michigan peninsula. It's an amazing operation. Beautiful grounds landscaped like Aladdin's garden. Highly modern housing developments and fine, well-planned streets and highways.

But most modern of all are the concrete lined tunn—well, drifts, some of which are deep enough to make Satan move his feet. Concrete means safety and economy. Three Butler Ready Mixed Plants do the pouring. They save a dollar a barrel over bag cement. That's enough to pay the salary and tax-free emoluments of the President of the U.S.A. I'm sure this gives H.S.T. a feeling of real security until January.

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There's a new bridge under construction across the Hudson River north of the George Washington span. It carries the Thru-way from the Great West to the Stork Club and the Copacabana. Rated as one of the great bridges of the world —traffic-wise and in length, it owes its sound footing and the span of its future to a Butler Mixing Plant which, floating on the Hudson, pours concrete for the foundations.

•

Obviously Butler Plants are at work just about everywhere. I'm planning a Butler Plant to pour concrete runways for flying saucers, but don't say anything just yet. I have a reputation to protect.

This year let's everybody vote.

The Butler Engineer

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NEW PRODUCTS

COMPLETE MILITARY MODEL of new Le Roi V-8 210-cfm motorized compressor includes 2½-ton 6x6 truck with double hose reels and hose. Standard tools include, right to left: 2 paving breakers, 2 medium weight sinkers, 2 clay diggers and a sheeting driving attachment. Extras include extensions and fittings, circular saw, wood borer and chain saw.

Severe military specifications met with 210-cfm V-8 engine-compressor

During World War II the Corps of Engineers had such remarkable success with truck-mounted compressors that it decided a newer and better model was needed—one with twice as much air output, no increase in weight, multiple tool application, increased fixed tool and accessory load, and no loss of speed or mobility in transit. In addition, a maximum air temperature of 250 deg F (with ambient of 120) and 35 percent surplus hp development were required.

Although a number of manufacturers regarded such specifications as impossible, the Le Roi Co., whose 105-cfm compressor mounted on a 2½-ton 6x6 truck had been standard Engineer Corps equipment during the war, decided to try to meet them.

When they took up the challenge, Le Roi men had two important factors on their side: (1) Theirs was the only company that manufactured both its compressors and gas engines; and (2) in addition to the standard military model, they had marketed a post-war combination air compressor and tractor which employed a single in-line block for both compressor and tractor engine.

• **V-8 design suggested**—After many trials (such as substituting aluminum freely in place of cast iron) they decided on a V-8 design with one bank of engine cylinders opposite the other bank of compression cylinders. But this was just the beginning of development problems, and they weren't to end until many distinct design innovations were incorporated—such as properly-balanced crankshaft, well-filtered air inlets, unusual cooling, etc.

• **Removable cylinder sleeves**—The unit has replaceable cylinder sleeves on both engine and compressor sides. These eliminate reboring operations and provide the cylinders with uniform cooling gradients. Down-draft carburation aids fuel economy, and positive filtration at both engine and compressor inlets guards against damage by foreign matter. Valve-in-head de-

(*New Products continued on p.* 107)

HOW J & L JUNIOR BEAMS SAVE TIME, SOLVE DESIGN PROBLEM AT LOW COST IN

ST. CHARLES SCHOOL

YOUNGSTOWN, OHIO

Architect P. Arthur D'Orazio and George J. Murphy Company, contractors-engineers, of Youngstown, Ohio, have employed lightweight J&L Junior Beams as cantilevered roof purlins at the Boardman Center's ultra-modern St. Charles School near Youngstown. J. A. McMahon, Ltd., Niles, Ohio, fabricated the 85 tons of structural steel and 35 tons of Junior Beam joists going into the framework.

Notched over lintel beams and cantilevered four feet beyond the outside walls, J&L Junior Beams support not only the roof but also an attractive permanent sun shield over classroom window walls.

Because of their versatility and adaptability, J&L Junior Beams go far towards meeting the demands of today's builders. They cost less to buy and less to erect. Lightweight, 12" Junior Beams, 11.8 lbs. per foot, 30 ft. long, may be easily raised, placed and bolted directly into position by three men with the aid of only a hand-operated winch.

The lightweight and consequent ease with which Junior Beams can be handled led to fast, economical construction that helped hold building costs to a minimum. ALL STRUCTURAL STEEL INCLUDING THE JUNIOR BEAM ROOF PURLINS WAS ERECTED BY 6 MEN IN 2 DAYS.

ARCHITECTS — CONTRACTORS

If you're engaged in the design, or construction of light occupancy buildings, you'll be interested in these features offered by J&L Junior Beams. EASY TO INSTALL, RIGID, VIBRATION RESISTANT, SHRINK PROOF, LOWEST DEFLECTION FACTOR OF ANY STRUCTURAL SECTION OF EQUIVALENT WEIGHT.

Why not write today for our new booklet: "Skyscraper Construction for Every Building"? It shows how Junior Beams are used as floor joists, and roof purlins with loading and spacing tables for various spans.

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PITTSBURGH 30, PA.

Jones & Laughlin Steel Corporation
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Pittsburgh 30, Pa.

Please send me a copy of the booklet entitled, "Skyscraper Construction for Every Building."

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Company_____

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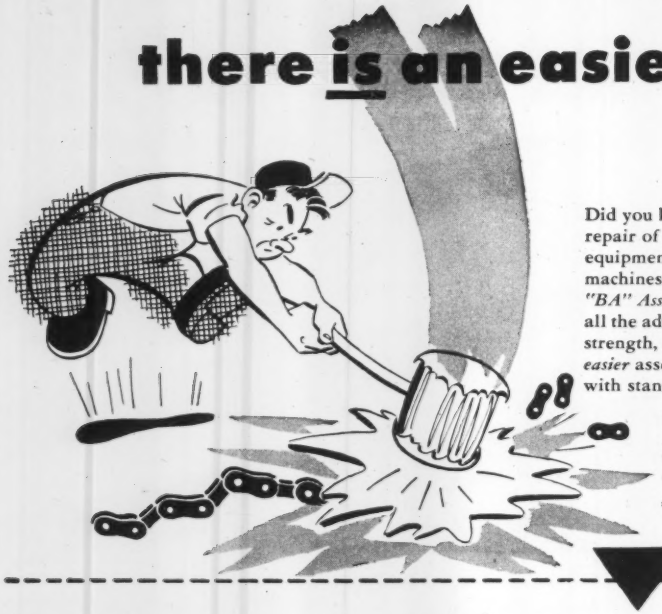
there is an easier way!

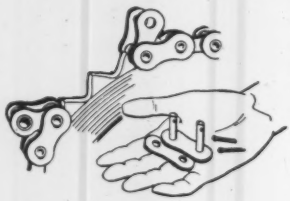


Did you know the job of assembly, disassembly or repair of the roller chain drives on your heavy equipment can actually be *easy*. It can . . . if your machines are equipped with Baldwin-Rex® *"BA" Assembly* Roller Chain. With "BA"* you get all the advantages of *riveted* roller chain . . . high strength, long life, low cost . . . plus even *easier* assembly, disassembly and repair than with standard cottered chain.

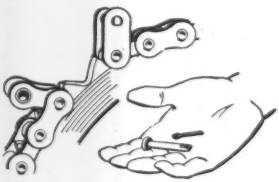
Look at the illustrations
. . . there's no doubt about it . . . the "BA" way is the easy way . . . the time-saving way . . . the money-saving way

*"BA" means Baldwin Assembly

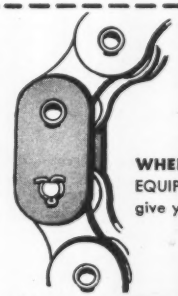
With standard roller chain, in order to take the chain apart in the field, you must drive out the entire pin link with hammer and punch. There is always the danger of damage to chain parts as the entire pin link is driven out. Assembly presents additional problems. The two pins must be driven back into the chain while one or more side plates (depending on the number of strands) are held in position. You almost need 3 hands to do the job.



With Baldwin-Rex "BA" Assembly, it's an entirely different story. All you have to do is remove the cotter and drive out the *single pin* of the special "BA" connector link. The other pin stays firmly riveted in place. No danger of damaging parts. Chain is cut by removing only 2 parts . . . the cotter and the single pin connector. To put the chain together, just put the side plates and roller links in place on the sprocket, insert the single pin connector pin and secure with the cotter. That's all there is to it!



For all the facts on "BA," send for our Bulletin 50-6. Chain Belt Company, 301 Plainfield Street, Springfield 2, Mass.



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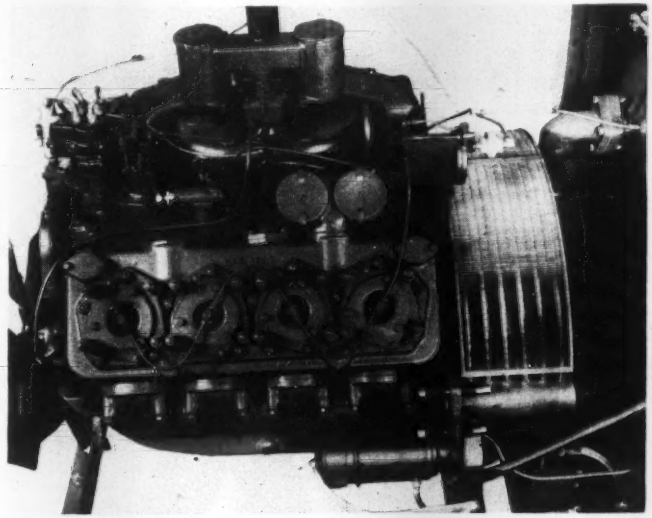

COMPRESSOR SIDE of V-8 rig has bank of compression cylinders, backed up and powered by bank of engine cylinders on opposite side. Semi-circular air cooler (right) is a pressure-tight core with fins that dissipate heat from air as it's passed from compression cylinders to receiver. Fins on flywheel beneath produce flow of air to assist cooling.

sign was incorporated for easier accessibility and better valve cooling. Hardened valve seat inserts and valve rotators give longer valve and seat life.

• **Unique air cooler**—The Corps of Engineers' temperature requirements were particularly demanding since their special type of hose sacrifices heat-resisting tendencies for adequate sub-zero operating characteristics. This called for a unique air cooler, semi-circular in design, located above the flywheel between the compressor discharge and air receiver. Measuring 36x16x12 in., it's a pressure-tight core with fins that dissipate the heat of the air. The main flywheel beneath is fitted with fins which produce a flow of air to assist in cooling. The unit is an aftercooler, but it acts in much the same way as an intercooler on conventional type compressors.

• **Lighter than 105**—The standard 105-cfm model from World War II weighed 4,300 lbs, dry, with housings. By comparison, the new V-8 210-cfm weighs only 3,100 lb with housings, hose reels and hose. In all, it betters the weight challenge by 545 lb. Tool boxes and a complete complement of tools weigh 2,400 lb more, bringing the gross weight to 5,500 lb. wet, for the new machine. The V-8 operates between 90 and 100 psi, held between these limits by an unloader. When pressure hits 100, the 4-cyl, 499-cu in. engine is held at idling speed; when pressure drops to 90, the engine is automatically revved up to produce more air. The rig develops the specified 35% surplus hp at the low speed of 1,125 rpm.

• **Maintenance is easier**—Le Roi kept maintenance in mind while designing the V-8. Wide side and top doors give access to parts, and the entire spring-mounted unit can be lifted off the truck for repair or quick replacement. Battery, distributor and coil are inclosed in a waterproof housing. The compressor works on a 24-v system with starting and operating controls located at the rear, between hose reels, for accessibility and good operator visibility.

• **Military's taking all**—Unfortunately, there are no V-8 210's for sale to contractors and other civilian users since the Army will continue taking all that Le Roi produces for quite some time. In fact, commitments to the government have been so intense that the company has not been able to give a thought yet to the time when they will be able to produce civilian models. Le Roi Company, 1706 S. 68th Street, Milwaukee 14, Wis.

(*New Products continued on p.* 110)

Best practices in civil engineering

to help you solve every-day problems QUICKLY

HERE, to meet the needs of practicing engineers who must solve specific problems—particularly those outside their specialized fields—is a modern treatment of the *fundamentals, theory,* and *practice* of the various subdivisions of civil engineering. With the aid of the up-to-date, detailed data and practice given in this completely revised 3rd Edition, you can check your present methods and procedures . . . enhance your ability to handle all kinds of jobs *more quickly and efficiently.* Each of the book's 10 big sections has been completely rewritten to bring you dependable fundamentals, methods, and data in the widely diverse fields of civil engineering.

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The useful life of cast iron pipe is known to be 4 to 5 times the average term of a water revenue bond issue. More than 35 American cities have cast iron mains in service that were installed over 100 years ago. A survey sponsored by three waterworks associations shows that 96% of all six-inch and larger cast iron pipe *ever laid* in 25 representative cities, is still in service.

Fortunately for taxpayers, over 95% of the pipe in America's water distribution systems is long-lived cast iron pipe—*the taxpayers' friend.*

This cast iron water main installed in Richmond, Virginia, 120 years ago, is still in service. Over 35 other cities have century-old cast iron mains in service.

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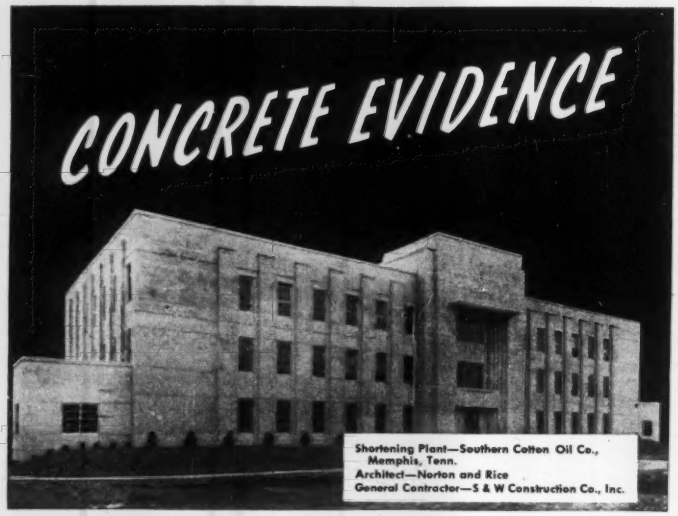

Shortening Plant—Southern Cotton Oil Co., Memphis, Tenn.
Architect—Norton and Rice
General Contractor—S & W Construction Co., Inc.

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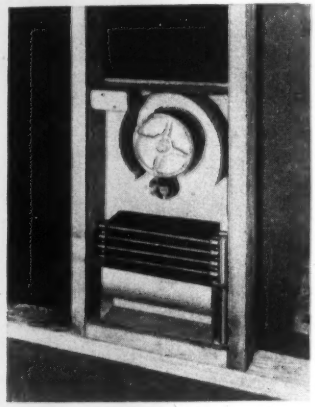

Radiators give room-by-room temperature control

This new radiator, sized to fit between standard studding, should have special appeal in office, residential and motel markets. Low temperatures can be maintained in vacant rooms and higher temperatures in occupied rooms. Called Air-rads, they reach heat output in 25 seconds and raise temperatures from economy level to comfort level at forced hot water speed.

Carpentry work is cut to a bare minimum with both single and dual models. The 9,000-Btu machine has a roughing-in width of 14 in. while the 18,000 Btu model takes 29⅝ in. Both are installed flush-in-wall. PENN BOILER AND BURNER MFG. CORP., LANCASTER, PENNSYLVANIA.

Electric tubular heater aids in welding

By placing a Chromalox heater between a weld line and larger sections of cold metal, a "heat dam" is formed which slows conduction of heat away from the weld. Various designs of basic Chromalox units are used to prevent loss of metal strength. The heaters reduce temperature differential between the weld area and adjacent metal, thereby eliminating locked-in stresses that cause failure of welded parts, according to the manufacturer.

In the case of a straight line weld, heaters are held in place about 6 in. from the weld line by bolting them to tack-welded studs. Special heater shapes are similarly attached to fit the heat to various weld contours. Heating elements are triangular in cross-section. with one flat side in contact with work

(Continued on page 113)

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We'll make this promise: You'll never have to "baby" this machine, even in the heaviest going! It's *built* for it — all-welded of alloy steels throughout, the toughest construction known. *It means steady digging.*

But the big pay-off in extra production comes with Magnetorque electric swing — enough faster to deliver 5 cycles to 4 on other machines in the 2½ yd. class. And the "time-outs" for adjustment and replacement of swing friction linings can now be salvaged for increased yardage. Magnetorque lasts the life of the machine.

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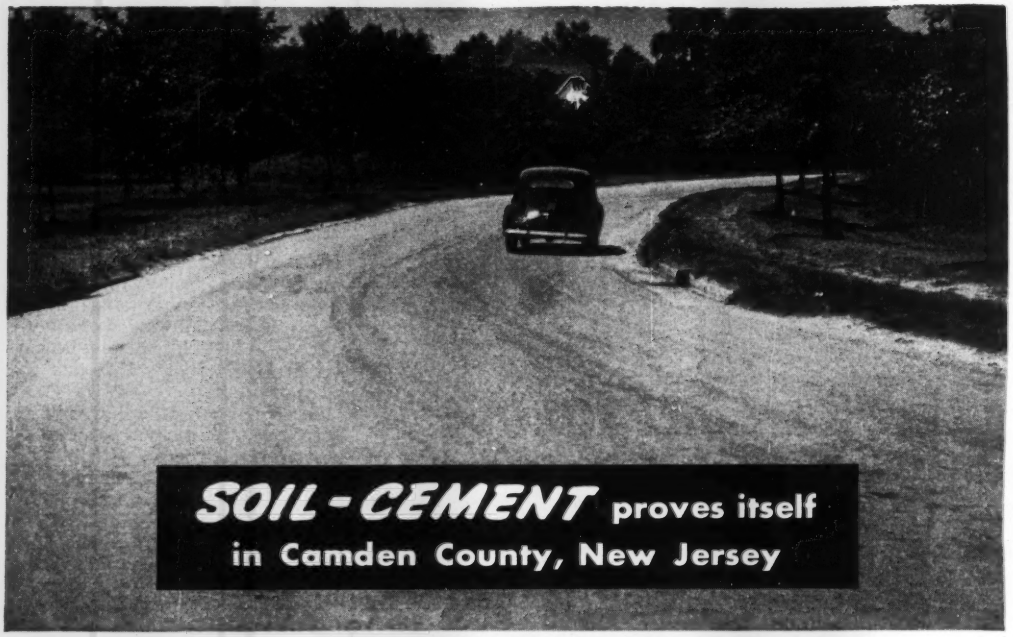
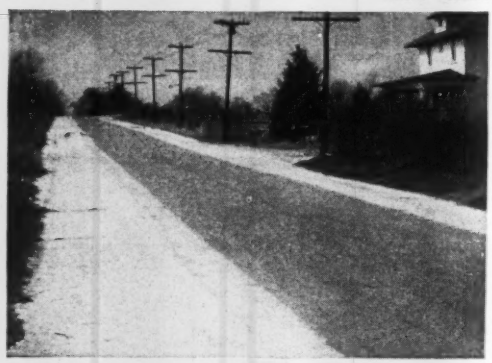
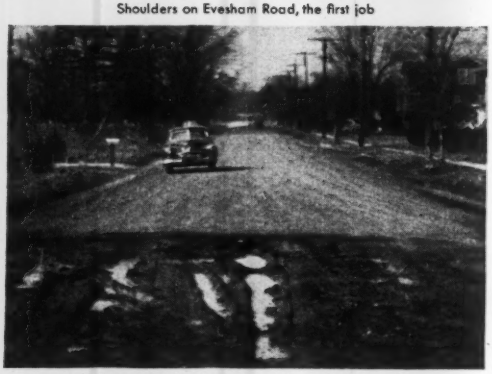


SOIL-CEMENT proves itself in Camden County, New Jersey

Above — South Park Drive, built in 1945



Shoulders on Evesham Road, the first job



Kirkwood Road, soil-cement section in background

In 1944 Camden County, N. J. paved the shoulders on a stretch of Evesham Road with soil-cement.* The results were so satisfactory that in 1945 the County tried soil-cement on South Park Drive—and successfully stabilized a roadway that had been a constant and expensive maintenance problem.

Then in 1946 the County used soil-cement on a section of Kirkwood Road. After the severe winter of 1947-48 this section remained in excellent condition, yet the non-soil-cement paving at both ends of the road completely disintegrated.

Soil-cement proved itself and Camden County expanded its use. Today the County has nearly 400,000 sq. yd. of durable, all-weather soil-cement pavement.

Like Camden County, other counties—and cities and states—have found that soil-cement is dependable pavement for low-cost roads, streets and airports.

Soil-cement pavements are economical because (1) about 85% of the required material is soil on the site, (2) paving is fast, (3) inexperienced crews quickly learn the simple construction procedures and (4) maintenance expense is low.

Write today for free illustrated literature on soil-cement. Distributed only in U.S. and Canada.

*Soil-cement pavement consists of a soil-cement base and bituminous surface

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In operation the heaters are turned on before welding begins until a temperature of 400-500 deg F is attained in the weld zone. Pre-heating and post-heating periods naturally vary according to type and thickness of metal.

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Insulated aluminum window matches insulating glass

The first fully-insulated aluminum window frame built to match double-paned insulating glass (such as Libby-Owens-Ford Glass Co.'s Thermopane) was shown recently to members of the American Institute of Architects at a builders' exhibit in New York City.

Called Thermo-Sash, it has been under test for three years in custom built installations in several northern states and the company says that its construction eliminates condensation and frost on interior metal surfaces at normal room temperatures and humidity, even when outside temperatures drop to below minus 20 deg. F.

Offered for all modern windows ranging from floor-to-ceiling window-walls to smaller combinations suitable for Colonial type architecture, the new sash is available to fit newer types of panel windows with or without vents. It comes as a packaged, pre-assembled unit ready for installation in remodeling projects, with all necessary hardware and fittings included. Structural strength of the frame is amply demonstrated by the accompanying picture. KESKO PRODUCTS INC., BRISTOL, INDIANA.

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ANSWER: After charging as high as 140 batches per hour on an airport project this batching operation was moved to the Pennsylvania Turnpike where this high production was maintained.

Heltzel Type One for aggregates and Type E-2 for bulk cement were set in line for continuous truck drive-through. Using dual batchers, 2-batch trucks were loaded in one stop and 3 and 4-batch trucks in only two stops.

Type One—Capacities: 52, 72, 85 and 100 tons; used with 1¼-cu. yd. Universal Batcher or 2½-cu. yd. Dual Batcher.

Type E-1*—Capacities: 100 and 200 bbls.

Type E-2*—Capacities: 300 and 400 bbls.

*Used with 14-cu. ft. Dustless and 28-cu. ft. Dual Dustless Batchers.

Capacities may be increased with hopper extensions and recirculating tanks.

The Heltzel Steel Form & Iron Company
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PUBLICATIONS

Soil Compaction by Vibroflotation—That's the title of a new red-and-white 8-p booklet that describes the process devised for compacting granular soils "in situ" at and to any depth below ground surface to increase stability, load bearing capacity and/or to decrease their permeability. Since its introduction in 1937, (ENR Jul 20 '39 p 63) rapid strides have been made in its development and these are explained in the booklet as well as answers to six most-asked questions by engineers interested in Vibroflotation. The Rust Engineering Co., 575 Sixth Ave., Pittsburgh, Penna.

Fuel cost calculator—Bituminous Coal Research, Inc., has developed a slide calculator for use by coal company engineers and by personnel of coal-burning plants. It is an easy-to-use tool for making fuel cost comparisons, and for computing coal consumption from boiler output.

One setting for coal of a given Btu and specific delivered cost, immediately shows the cost at which any other fuel must be provided to give the same cost per million Btu in the fuel. Another scale permits efficiency to be taken into account. The range of fuel prices on the slide is great enough so that the calculator will not become obsolete in the foreseeable future. It is available at a list price of 50¢ each in any quantity. Bituminous Coal Research, Inc., 2609 First National Bank Building, Pittsburgh 22, Pa.

Bil-Jax scaffolding and equipment—This new consolidated 20-page catalog is printed in two colors and describes every item in the line of Bil-Jax tubular steel scaffolding and equipment. The new book incorporates all the information which heretofore appeared in two smaller catalogs, one for the tower type scaffolding and one for the maintenance trestle. Also included are rolling, fixed and swing types; results of laboratory load tests and suggestions for maximum safety. Bil-Jax Inc., Archbold, Ohio

Truck self-loader—Brisson Bros. Machinery Company has available a new descriptive folder lithographed in two colors, blue and black, and presenting illustrations of many uses of their "LoDal" that loads, hauls and dumps. Designed to be a ready reference for this type of equipment, the 4-page folder includes specifications and is available from Brisson Bros. Machinery, Norway, Michigan.

Remote-control wiring system—This is a 36-page booklet with complete instructions on layout and installation of remote-control wiring systems in homes, farms, factories, etc. Master selector switches can be installed in any location, and can light all rooms from that one spot. For example, forgotten lights can be switched off through the bedside master selector switch—outdoor floodlights can be illuminated from any room in the house-attic and kitchen ventilators can also be controlled from various locations—and extended controls can be added at any future date.

It is particularly useful in commercial buildings where it might be necessary or advantageous to place the control of light and power at one or more central locations. This new type of wiring makes a multipoint-control system practicable. It also saves attendant's time by eliminating periodic rounds for checking lights. GENERAL ELECTRIC CO., CONSTRUCTION MATERIALS DIVISION, BRIDGEPORT 2, CONN.

Acoustic panels—This booklet describes how new IAC acoustic panels, standardized for the first time, can be used to silence noise in hundreds of applications ranging from power plant transformers to all phases of machinery. It is available from INDUSTRIAL ACOUSTICS CO., INC., 333 JACKSON AVENUE, NEW YORK 54, N. Y.

Track rail welder—A 4-page folder describes an automatic "packaged" welder-positioner for rebuilding crawler tracks, fabricating and hardfacing. It explains how an operator can position crawler tracks taken from a tractor, power shovel or trencher and place the entire track chain on a welding bed. After securely clamping it in place, he then manually advances the carriage and lowers the head until proper contact is made at the start of the first link. A piece of pressure-sensitive tape is laid across contact rail at this point, and at each succeeding link joint.

Flux is poured onto the bed and screeded to the level of the rail. The flux bin on the carriage is filled. Carriage is positioned for the first pass, and welding starts. Each pass after that is automatically controlled.

Weld metal is deposited only on the worn portion of each link rail. Grinding or cutting is entirely eliminated as far as welding is concerned, if the set-up is properly made. DEAN WELD MACHINE, INC., 10154 EDES AVE., OAKLAND, CALIFORNIA.

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EDITORIALS

A dearth of highway engineers

"WHETHER it is because of the fact that adequate pay was not provided over years past, or whether it has resulted from political manipulation of highway departments in many states, this field of engineering has not attracted the new blood that it should have. And this is a sad commentary on a very important situation in this country that someone should do something about. After all, approximately three billions of dollars in automotive taxes are collected in this country every year and the road-building bill exceeds this amount. Three billion dollars is big business and we should have adequate, competent, trained personnel on a continuing basis on that job to handle such a situation."

That statement was made last week by John V. Lawrence, managing director of the American Trucking Associations, in his report to the annual meeting of the organization in New York. Mr. Lawrence's conclusion will not come as news to our state highway departments. Most of them have been all too conscious of the situation for several years past.

What gives special significance to this particular statement is that it was made by the executive head of an organization with active representatives in every state capital and which depends for its very existence on adequate highways. With ATA backing a drive for better pay for engineers in state highway departments or for less political meddling in the affairs of those departments, such campaigns will have much better chances for success.

No substitute for judgment

IN MAKING AVAILABLE a new method of determining stresses in concrete slabs (see p. 44) the Presan Corporation, of Los Angeles has made a noteworthy contribution to the progress of structural analysis. Properly applied, this technique of using mirrored models to predict the behavior of slabs under load may be very helpful in checking designs based on mathematical analysis and judgment. But it has certain inherent weaknesses common to all methods of model analysis that make advisable an independent check by some other method.

The danger of relying solely on model analysis was brought out in the premature failure during a load test early this year of a two-way reinforced ribbed slab in Florida (ENR May 22 p. 25). Engineers who investigated that collapse testified at a hearing that they believed the slab contained insufficient reinforcing steel. Prior to the failure, the designer of this slab had announced that on the basis of Presan analysis he had reduced reinforcing to less than 50% of the steel indicated by conventional analysis.

This lesson should not go unheeded. While conventional analysis has shortcomings, a new method of stress determination that yields radically different solutions should be used cautiously.

In this connection it should be noted that the conventional method has been modified to accord with experience with full-sized structures and with tests in both field and laboratory. Also, that method has given acceptable results for about half a century. A model, on the other hand, is made of a material whose behavior may be considerably different from that of the prototype under both short-time and long-time loading.

Whether an engineer designs structures in accordance with mathematical analyses or results of model-studies, he must be familiar with the basic assumptions involved. When these assumptions are not in reasonable agreement with actual conditions, he must use judgment in interpreting his calculations and in translating them to steel and concrete. There is no substitute for judgment.

The educator's problem

CONFLICTING OPINIONS concerning engineering education are found in two recent statements on that subject, one by an educator, Harold E. Wessman, dean of the engineering school at the University of Washington, and one by an industrialist who was trained as an engineer, Robert C. Sprague of the Sprague Electric Co. The latter said "From my observation, the man with the strongest basic training has the greatest adaptability, because the basic sciences can be applied to different problems in many branches or to a single problem which may extend into overlapping branches." Dean Wessman, on the other hand, says "Some say we need more science in order to give our students a better grounding on basic principles . . . There is a danger lest in the attempt to make better scientists out of our engineering graduates we make them poorer engineers . . . One of the most difficult tasks confronting the teacher is stimulating the creative instinct in engineering students."

Both Dean Wessman and Mr. Sprague are in agreement on other points, however. Both hold that a four-year undergraduate course, at best, does not train an engineer adequately for today's needs. Dean Wessman favors at least a year of post-graduate study for many civil engineers, followed by continuing study after the young engineer goes to work. Mr. Sprague wants the schools to put more emphasis on the humanities. Our society, he says, cannot progress if engineers are trained only to be engineers. "The individual who is disciplined solely in the physical sciences is likely to have little understanding of, or patience with, the problems involved in dealing with human materials and forces, which are far less tractable than the substances and forces he deals with in the laboratory."

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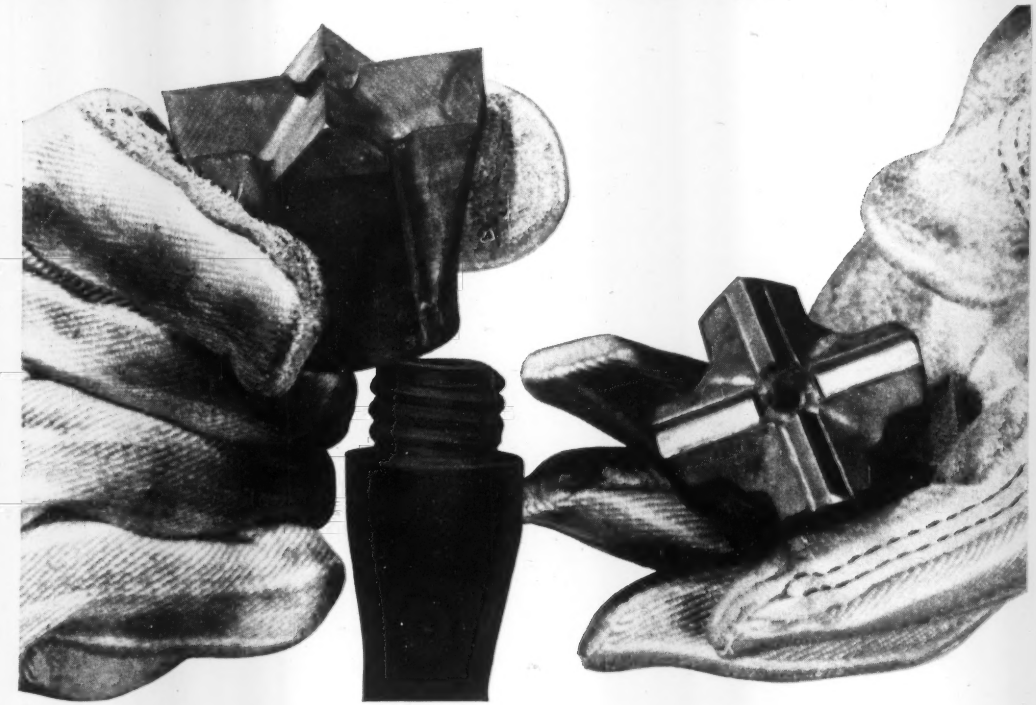

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